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ON THE IMPORTANCE OF THE GASTROSCOPE IN THE DIAGNOSIS OF GASTRIC DISEASES IN THE ARMY

BY

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During and after the war of 1914–18 the medical officer faced several difficult problems involving soldiers who tended to suffer from epigastric distress.* It usually was easy for him to come to a quick and correct decision when a soldier reported off duty because of an external disease, injury, or wound. Such a decision, however, was sometimes difficult in internal diseases, especially when epigastric pain was supposedly present.

The duty of the medical officer at the front is obviously a twofold one: he must preserve the fighting strength of his battalion and he must give medical care to the sick soldiers of his unit. There is no army in existence in which soldiers will not try to escape front-line conditions by pretending to have a disabling internal disease. In these instances the medical officer is forced to rely almost entirely upon his objective findings.

When a soldier reported himself ill because of severe epigastric distress a most careful examination usually revealed nothing. However, some "stomach powder" or "stomach medicine" was given. A few days later the patient came back complaining that his pains were not relieved. Then another medicine was tried, and the man was sent back to duty. When he reported the third time the situation became difficult for the medical officer. He knew that a sick soldier was useless at the front, and therefore sent him to an army mobile hospital. Since time did not permit a thorough examination the patient was referred to a base hospital for internal diseases, where finally a complete check-up, consisting of stool examination for occult blood, gastric analysis, and especially an *x*-ray examination, became possible.

In the great majority of these cases nothing was found. The patient was pronounced healthy and was returned to the front. When he complained again of epigastric pain he was looked upon once and for all as a malingerer. As will be shown later, however, many of these men *had* real organic disease caused by the ordeals of trench service, the insufficient food, and the drinking of rainwater from shell holes. A man with such an illness felt that he was treated unjustly. He put the blame on the medical officers, and developed, naturally enough, a severe psychoneurosis which surpassed all organic symptoms and became finally, under German law, a compensation neurosis.

Neurotic symptoms, even when caused by the war, were excluded from any compensation. If a pension had been paid for neurotic symptoms, compensation neuroses would have been cultivated to an unbearable extent. The most careful examinations failed to reveal anything in a great number of the patients who maintained that they were suffering from severe epigastric distress in the years following the war. Thus a psychoneurosis was diagnosed, and the grant of a pension was refused. However, often the medical officers themselves were not satisfied with these decisions. They knew that in many cases the patient had been a gallant soldier for three or four years, and they were reluctant to attribute the presenting symptoms to a compensation neurosis.

In 1921 the officers of the chief military pension hospital in Munich learned that the patients in the municipal hospital, Munich-Schwabing, were being examined with a new rigid gastroscope. They induced those patients who were suffering from epigastric distress to see me and to undergo this examination. From a psychological viewpoint it is interesting to note that none of these patients refused to comply with this suggestion. I was able to watch them over a long period of years, and one of them (see Case 2, below) was examined with the gastroscope no fewer than sixty-five times within ten years. It should be remembered that at that time the old rigid Schindler gastroscope was used; examination with this instrument was neither entirely safe nor very agreeable. The safe Wolf-Schindler flexible gastroscope, which permits a good view of the stomach without any real discomfort, was not invented until 1932.

It was possible to save thirteen case histories of patients examined in 1921 and 1922. I believe they will reveal evidence that, in time of war at least, gastroscopy will prove a valuable procedure for the Army. The recent development of *x*-ray relief technique with spot machines should not be overlooked, but the strongest possible emphasis should be laid on the fact that differentiation

* I can only refer to my own experience, acquired during one year of service in the German Army from 1912 to 1913, and four years' war service in the trenches and in army mobile hospitals, and to my post-war experience in cases submitted to me for expert testimony in that army. However, similar problems are probably found in the military organization of every nation.

between diffuse organic lesions of the stomach (chronic gastritis) and psychoneuroses is impossible even with the most refined *x*-ray technique.

Below are given records of cases of gastric disorder in which examination was carried out with the flexible gastroscope.

Chronic Gastritis

Case 1.—The patient, a carpenter aged 30, had been suffering from abdominal pain since the war. He complained of fullness in the epigastrium with belching since May, 1920. At that time he lost 6 kg. in two weeks. Physical examination revealed a tender spot in the back on the right side of the tenth thoracic vertebra. Sometimes the stool contained occult blood. Gastric analysis: free HCl, 20; total acidity, 33. Radiographs were negative. The man was an outspoken psychoneurotic individual. On gastroscopy in 1922 the whole gastric mucosa looked dull and spongy and was markedly reddened. Three ulcers lying in a row were seen on the anterior portion of the lesser curvature of the body. They were about the size of a pea or bean, and were irregular in contour, with ragged edges. The ulcers were quite deep; their floor was yellowish grey and they were surrounded by a red halo. The diagnosis of severe hypertrophic ulcerative gastritis was made. This was the occasion when we first realized that ulcerative gastritis was a clinical entity, and we gave a description of it in 1922.

FIG. 1.—*Chronic hypertrophic ulcerative gastritis* (Case 1). Three shallow ulcers are seen lying in the swollen mucosa of the lesser curvature.

Case 2.—This thoroughly observed case has been published elsewhere (Schindler, 1936b). I shall quote only the summary here. The patient had had continuous gastric distress since the war. He applied for a pension, but with the usual methods nothing was found. The summary of the case history reads as follows:

"(1) A patient suffering from severe hypertrophic ulcerative gastritis was observed over a period of twelve years. (2) *X*-ray relief technique did not demonstrate the very marked changes of the mucosal relief. Sixty-five gastroscopies were performed. (3) Ulceration and extreme pain were present without interruption. (4) In spite of protracted careful observation, development of a gastritic ulcer into true gastric ulcer was not seen. (5) Coutard's method of high-voltage *x*-ray therapy caused severe acute purulent gastritis and subsequent regeneration of an essentially normal mucous membrane. The picture was seen for one year. The patient seemed to be cured, when atrophic gastritis developed as a late result of the therapy. (6) Radiotherapy by Coutard's method can be recommended only for the most severe cases of hypertrophic ulcerative gastritis which have been observed gastroscopically over long periods and which fail to respond to the usual methods of therapy (diet, rest in bed, silver, alkali, etc.)."

Case 3.—Gastroscopy in 1922. The patient complained of epigastric pain and vomiting aggravated by meals. Physical examination revealed tenderness in the epigastrium. No occult blood was found. Gastric analysis after an Ewald test meal: free HCl, 80; total acidity, 91. On *x*-ray examination the findings were not conclusive. By gastroscopy the pylorus was visible; no ulcer was seen. The mucosa of the lesser curvature was velvety and nodular, and contained two small brown spots. The impression was that this was a case of chronic hypertrophic gastritis.

Case 4.—Gastroscopy in 1921. Since the war this patient, aged 28, had complained of epigastric pain, occurring two and a half hours after meals. His appetite was good. No vomiting, gross haemorrhage, anaemia, or loss of weight was noted. *X*-ray examination revealed nothing of significance. Gastric analysis after an Ewald test meal disclosed no free HCl, the total acidity being 17: no lactic acid or blood was present. A small amount of mucus was noted. Although the patient did not impress us as being a psychoneurotic individual, the physicians of the military hospital considered that the diagnosis of gastric neurosis with anacidity should be made, that no organic disease was present, and that the patient was not entitled to any pension. However, gastroscopic examination was asked for. On gastroscopy the entire stomach was seen. The mucosa everywhere was covered by flakes of mucus. Red patches were observed throughout the stomach. On the anterior wall and the greater curvature of the body some small dark red spots were found in which a marked defect of the epithelium was recognized. The gastroscopic diagnosis was that of chronic erosive gastritis. To-day we would call this picture a chronic superficial erosive gastritis.

FIG. 2.—*Chronic superficial erosive gastritis* (Case 4). Red patches, adherent flakes of mucus, and one dark red shallow erosion are present.

Case 5 (*Gross Haemorrhage in Superficial Gastritis*).—This patient had had a well-observed gross gastric haemorrhage in 1916. Now he asked for a pension, complaining of a colic-like epigastric pain without definite relation to meals. The physical examination was essentially negative. *X*-ray examination did not reveal any disease. Gastroscopy on March 9, 1922, showed that the gastric mucosa was somewhat oedematous and was covered with adherent mucus. In the mid-portion of the lesser curvature two erosions were seen. The floor of each erosion was grey and the margins were dark red. The pyloric action was normal. The gastroscopic impression was that of a chronic superficial erosive gastritis.

Gross haemorrhage in erosive types of gastritis has been described repeatedly, especially in the past few years (Benedict, 1937). This is probably one of the earliest cases observed, although there was no direct evidence that the same disease was already present in 1916. Gross haemorrhage in superficial gastritis is rare: it is rather frequent, however, in hypertrophic ulcerative gastritis. It was more than likely that erosions like those observed in this case were the cause of the severe pain. To-day we know that recurrent ulcerations or erosions in chronic gastritis may cause pain as severe as in true gastric ulcer.

Case 6 (*Gastritis in a Post-operative Stomach*).—This patient, 37 years old, had been suffering from a duodenal ulcer since the war. He had had a gastro-enterostomy on August 16, 1921, but epigastric pain, vomiting, and loss of weight persisted. The stomach contents after an Ewald meal were reported normal. *X*-ray examination revealed spasm: the artificial stoma as well as the pylorus showed normal

function. Gastroscopy in 1932 showed that the mucosa was loose and spongy, and in the lesser curvature creases and crevasses were found. The diagnosis of a severe chronic hypertrophic gastritis in a post-operative stomach was made.

The frequency with which a severe type of chronic gastritis is observed in post-operative stomachs led to a new classification of chronic gastritis. Chronic gastritis of the post-operative stomach now forms a special group (Schindler and Ortmayer, 1936; Schindler *et al.*, 1937). It was evident that the complaints of this patient were justified, although it seemed difficult to decide whether the inflammation preceded the operation or followed it.

Case 7 (Gastritis of the Post-operative Stomach caused by a Silk Suture).—This patient, aged 40, complained of epigastric distress, loss of weight, and vomiting for two years. A gastro-enterostomy was done on October 15, 1921, because of an obstructing duodenal scar. At first there was a definite improvement, but later the patient complained of colic-like pain in the epigastrium. Physical examination failed to reveal any cause. The stools did not contain occult blood.

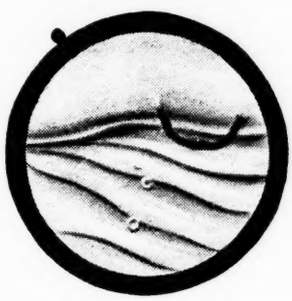

FIG. 3.—Silk suture after gastro-enterostomy; this had cut through the gastric mucosa and was hanging freely in the cavity (Case 7). The marked superficial gastritis present in this area is not well demonstrated in the black-and-white illustration.

X-ray examination showed increased peristalsis; the barium emptied satisfactorily through the gastro-enterostomy stoma. By the Ewald test free HCl was 10 and total acidity 60. Gastroscopy in 1922 showed that the gastric mucosa of the body was covered with much translucent shiny mucus. The mucosa of the lesser curvature was normal, but at the lesser curvature towards the pylorus (which remained invisible) a thick black suture was seen which had cut through the mucosa and was hanging freely in the gastric cavity. The gastro-enterostomy stoma was not found. The diagnosis was: "The silk suture had cut through the mucosa of the lesser curvature and was hanging freely as a foreign body in the gastric cavity. Severe superficial gastritis."

Silk sutures, if still covered by epithelium, are readily seen with the gastroscope and constitute innocuous foreign bodies. As soon as they cut through the mucosa, however, they cause friction and almost invariably gastritis, erosions, and even ulcers. Here again a definite disease not demonstrable by any other method was found gastroscopically. These findings justified the complaints of the patient and led to adequate treatment. Advice for re-operation was given.

Gastric Ulcer

Neither duodenal nor pyloric ulcer can be detected gastroscopically. They must be found by thorough *x*-ray examination. Gastric ulcer often is well observed by gastroscopy, and the healing process or mucosal complications may then be checked by repeated examinations. The advantage of gastroscopic diagnosis is not so outstanding in ulcer as it is in the diffuse inflammations.

Case 8.—This patient, a carpenter aged 40, was seen on October 10, 1921. He had epigastric distress and vomited after meals. His appetite was fairly good. He complained that he had had similar pains during the war, but a diagnosis of severe psychoneurosis was made because no disease had been found and the patient was evidently a psychoneurotic. Physical examination revealed tenderness of the epigastrium. There was no occult blood in the stools. Gastric analysis after an Ewald test meal showed free HCl 8, total acidity 24.

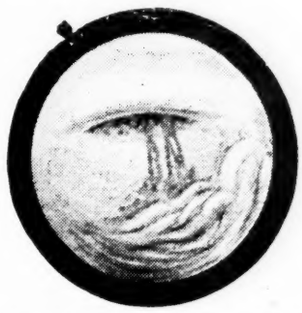

FIG. 4.—*Bleeding gastric ulcer* (Case 8). This ulcer could not be demonstrated by *x*-ray examination.

Radiographs disclosed nothing pathological. By gastroscopy, at the lesser curvature towards the anterior wall a dark red ulceration with elevated borders was seen from the tangent. It was bleeding slightly. The condition was thought to be chronic gastric ulcer with fresh haemorrhage.

This bleeding gastric ulcer was not found by *x*-ray examination. It is doubtful whether it would be demonstrable even now by the refined relief technique. I have noticed that these "red" bleeding ulcers are not demonstrable by fluoroscopy or films even when the best technique is used, because the crater is filled with clotted blood and the barium cannot enter it.

Case 9.—This patient had suffered from epigastric pain since the war and had had several gross haemorrhages. On physical examination he had tenderness of the epigastrium. No occult

FIG. 5.—*Benign gastric ulcer* (Case 9). At the right side (1 to 3 o'clock) the dark cavity of the antrum is seen. A black pigment spot is lying in the mucosa proximal to the antrum. At 12 o'clock air bubbles and tiny mucosal haemorrhages are observed. At the centre of the visual field the ulcer is seen.

blood was present in the stools. Gastric analysis: free HCl 71; total acidity, 86. Radiographs were negative. Gastroscopy in 1922 showed that the action of the pylorus was normal. In the lesser curvature of the body some small mucosal haemorrhages and some pigment spots were observed. Above the incisura angularis a crater-shaped ulcer was seen. Its floor was yellowish, its edge sharp. The ulcer was shallow towards the cardia but undermined and overhanging at the pyloric side. This overhanging edge cast a shadow on the floor of the ulcer. Impression: round gastric ulcer of the lesser curvature.

In this case one may safely assume that the ulcer would have been discovered by modern *x*-ray methods. It should be mentioned that in 1927 a resection was performed. The ulcer was found in the resected specimen. The patient died from the surgical intervention.

Tumour

Case 10.—This patient, a labourer aged 45, entered the hospital on July 6, 1922, for examination. The military hospital asked us for an opinion. The patient complained of epigastric distress dating back to 1916, when he had bacillary dysentery. He had since complained of "stomach pain" unrelated to meals. He had attacks of colic and vomiting, and lost weight although his appetite was good. Physical examination did not reveal any disease. The benzidine reaction in the stool was slightly positive. The fasting stomach contained 20 c.cm. of bile-stained gastric juice. After an Ewald test meal no free HCl was found: the total acidity was 18. Lactic acid was absent. The *x*-ray examination was negative. Gastroscopy revealed a most surprising picture. The mucosa of the lesser curvature was reddish grey, somewhat mottled. At the entrance of the antrum a spasm of the circular muscle fibres occurred, with the formation of thick elevated folds so that the cavity of the antrum became entirely shut off from the gastric cavity. When the spasm relaxed slowly a small, irregular, strawberry-like tumour was revealed on the posterior wall. The cavity of the antrum was exposed, and the moderately broad base of the tumour was well seen. The action of the pylorus was now observed. Then the spasm occurred again. The same course of events was observed several times, and one had the definite impression that the contracting muscle seized the tumour and tried to expel it through the pylorus. The gastroscopic impression was: slight atrophic gastritis of the lesser curvature; solitary benign mucosal tumour of the posterior wall of the antrum.

This patient was observed over a period of ten years and was examined with the gastroscope at medical meetings. The same picture was seen repeatedly.

The combination of dysentery with anacidity and atrophic gastritis is well known. Most pathologists assume that benign gastric tumours develop on the soil of chronic atrophic gastritis. Therefore a connexion between the benign tumour and the patient's war disease—dysentery—might be assumed. The benign tumour evidently caused the abnormal contractions of the muscular coat, which apparently were responsible for the pain.

Normal Mucosa

Case 11.—This patient, aged 30, was referred by the military hospital on October 29, 1921. He had had a gross gastric haemorrhage in 1913. Another melaena was observed on October 15, 1921. The patient was then sent to hospital and recovered quickly. Tarry stools were noted. An aspiration test was omitted. On *x*-ray examination an ulcer of the lesser curvature was suspected. A blood count gave 55 per cent. haemoglobin and 3,700,000 red cells. By gastroscopy the entire stomach and the activity of the pylorus were well seen. However, no ulcer was found.

In this case gastroscopy did not explain the severe haemorrhage. Gastric ulcer could be excluded with certainty. It is not impossible that a gastric erosion had healed completely between October 15 and October 29.

Case 12.—This patient, a carpenter aged 40, was referred by the military hospital on February 24, 1922, for gastroscopy. Since the war he had had epigastric distress and vomiting, not related to food. He said that once he had vomited some coffee-ground material. This, however, had not been observed. The physical examination was negative. No occult blood was found in the stools. Gastric analysis after an Ewald meal showed a complete absence of free HCl: the total acidity was 15; no pepsin was present and no lactic acid was found. On *x*-ray examination an ulcer of the duodenum was suspected, but it was mentioned that carcinoma could not be excluded. Gastroscopy showed spasms and normal mucosa. This case remained obscure.

Case 13.—This man, a driver aged 25, was referred by the military hospital on February 16, 1922; he had been complaining of epigastric distress since 1915. The pain began one to two hours after meals and was associated with vomiting and loss of weight. The patient's appetite was good. Physical examination did not reveal any disease, and the stools did not contain occult blood. Gastric analysis after an Ewald test meal revealed: free HCl, 63; total acidity, 72; no blood was found. An *x*-ray examination was negative. With the rigid Schindler gastroscope marked resistance at the oesophageal hiatus was observed and was finally overcome. A good view of the mucosa was obtained and marked spasm was found at the entrance of the antrum, which was not completely closed. Impression: spasm without organic lesion.

Discussion

The case reports of thirteen patients suffering from epigastric distress are presented to determine whether or not disease caused by military war service existed. In seven of these cases chronic gastritis was found. This condition caused superficial ulcerations in four instances and haemorrhage in one instance. In one of these cases gastritis of a post-operative stomach was found to be caused by a silk suture acting as a foreign body. In two cases overlooked ulcers were seen gastroscopically. In one case a benign tumour was found. In three cases in which the gastric mucosa was seen to be normal the diagnosis of gastric neurosis was made, although in one of them a duodenal ulcer might have been present. Thus the gastroscopic examination in ten out of thirteen cases gave a positive result, which was gratifying to both the patient and the medical staff.

Since 1922 *x*-ray technique has made great progress, especially in relief technique with spot machines. By using this method few gastric ulcers are overlooked: the diagnosis of duodenal ulcer can be made almost with certainty. However, it should be emphasized *that the most refined x-ray study cannot make the diagnosis of chronic gastritis* except in rare cases of polypoid chronic gastritis.

The differential diagnosis between psychoneurosis and chronic gastritis in patients suffering from epigastric distress is of great importance to the Army and probably to the Navy. The cases presented prove that this differential diagnosis is possible only by the use of the gastroscope. Since the invention of the flexible gastroscope the examination has become safe and easy, and can be carried out in all cases. The co-operation of the patient is indispensable, but in our experience every soldier who appears to be suffering from chronic epigastric distress is eager to undergo an examination which might reveal a definite organic lesion of his stomach. This is true of psychoneurotic patients as well. Most patients who refuse examination and fail to co-operate are malingerers. The severity of the clinical picture of chronic gastritis must be emphasized: pain secondary to ulceration, haemorrhage, and general weakness make these patients unfit for military service and partly or totally disable them from following their occupations.

Obviously it is impossible to have roentgenological spot machines or gastroscopes at army mobile hospitals or even in non-specialized military hospitals. Centralization in examining these cases becomes imperative. Either one special hospital for gastro-intestinal diseases or a gastro-intestinal department at a hospital for internal diseases is necessary. The regimental medical officers should be informed of its existence and should not hesitate to refer every soldier who complains of epigastric

distress for more than three months. In the organization of such a unit it should be borne in mind that for the adequate use of the *x*-ray spot machines and the interpretation of the pictures obtained training for at least two years is required. One should perform at least 1,000 examinations to become sufficiently experienced in interpreting the quickly changing gastroscopic pictures. About two years' training is required to attain this efficiency. A well-trained medical staff is as important as the instruments used. Two *x*-ray spot machines should be available so that the service may go on when one of them needs repair. For the same reason at least four gastroscopes should be on hand, two having a visual angle of 80 degrees and two with a visual angle of 50 degrees. Technical details on these points are given in my textbook on gastroscopy (Schindler, 1937).

Summary

I have reported thirteen case histories of patients of the post-war period who suffered from epigastric distress and who were referred by the local military hospital for gastroscopic examination. In ten of these organic disease (chronic gastritis, ulcer, gastritis caused by a silk suture, benign tumour) was found: in three cases no changes in the gastric mucosa were seen.

It has been emphasized that chronic gastritis is the most frequent gastric disease. In soldiers complaining of epigastric distress, especially in time of war, the differential diagnosis usually lies between chronic gastritis, psychoneurosis, and malingering. Only gastroscopy with the safe flexible gastroscope permits an accurate diagnosis. Patients suffering from chronic gastritis are usually unable to perform military service and are often more or less disabled in any kind of work.

Suggestions are offered for the organization of military medical service for patients complaining of epigastric distress. Centralization seems to be imperative. The need for a sufficiently trained medical staff is emphasized.

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In the Hong Kong Annual Medical Report for 1938 it is stated that the year was marked by prevalence and persistence of infectious disease, chiefly small-pox and cholera. Hong Kong had an influx of poverty-stricken and starving refugees from the mainland—victims of the war. There was thus much overcrowding, and the low resistance of these people made them a ready prey to infection from the local carriers of cerebrospinal meningitis, so that this disease rapidly rose to epidemic proportions. Malaria, thanks to the maintained energies of the Malaria Bureau, yearly becomes less of a scourge, and no case of blackwater fever is recorded. Pulmonary tuberculosis killed 4,920 people in the year, causing one out of eight of all deaths. Dysentery was also rife. Scarlet fever remains a rarity in the colony. The death rate is estimated at 37 per 1,000; in 1937 it was 34.4. Every effort is being made to bring the sanitary inspectors under direct control of the health officers. Hitherto they have taken their orders from the chairman of the urban council—an unsatisfactory system which is described as being imperfect and inadequate. The health department under the D.M.S., Dr. Selwyn-Clark, is actively administered, but has to contend with various difficulties, such as overcrowding of hospitals, that retard its progress.

X RAYS IN DIAGNOSIS AND TREATMENT OF GAS GANGRENE

BY

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When gas gangrene can be diagnosed from the clinical findings the likelihood of cure is remote: cure is dependent upon early diagnosis. Bacteriological examination of the suspected tissues involves biopsy, which, apart from the possibility that it will spread the infection, results in a considerable loss of valuable time. By radiography it is possible within a few minutes and without any injury to the patient to detect the formation of gas in the tissues before it has produced any clinical signs. Indeed, Kelly, Dowell, Russum, and Colien (1938) urge that *x*-radiation is the application which offers the best therapeutic results; while in those cases which have progressed so far that gas crepitation is detected clinically we can obtain by radiography a good idea of the extent of the invasion and also a guide to the possibility of eradication by amputation.

Radiographic Appearances

The radiographic appearances are dependent upon the nature of the anaerobic bacterial invasion and the stage of the disease. In the penetrating wound the formation of gas bubbles around the foreign body will be the first indication of anaerobic infection; but it must be remembered that the foreign body, such as wood splinters, clothing, and other materials of this density, in or by which the organisms were introduced will not be revealed by the radiograph, so that the gas bubble may be the only evidence of the presence of foreign material. Such localized collections of gas were more frequently discovered during the radiographic examination of a wound a week or two after its production, and were usually associated with the *B. sporogenes* or *B. perfringens* (now classed by some authorities with *B. welchii*). Examples of such radiographs have been published previously (Brailsford, 1939). Radiographic localization of such small collections of gas, and surgical cleansing (including the employment of bipp) of the wounds which include them, resulted in the eradication of the infection (Brailsford, 1939).

Invasion of damaged tissues by *B. welchii* (*Vibrion septique*) occurring after abrasions of contused tissues, penetrating wounds, and sometimes subcutaneous and intramuscular injections results in an acute fulminating gas gangrene which presents a very different radiographic appearance, for most cases are not submitted for *x*-ray examination until there is clinical evidence of gas gangrene and the prognosis is extremely grave. When the organisms are introduced by abrasions gas bubbles first appear in the subcutaneous tissues. These may develop to a large size and later, by virtue of the gas pressure within, spread along these tissues to the extremity of the affected limb or on to the trunk. Often by the time the nature of the infection is suspected the invasion has passed beyond the bounds of the subcutaneous tissues, and the radiographs will reveal separation of the muscle fibres by the interspersion of linear accumulations of gas as in Figs. 1 and 2. An estimation of the extent of the invasion can be determined by a careful inspection of a radiograph large enough to well cover the affected area. The rapidity of the invasion of the tissues could be shown by the comparative examination of further radiographs after a short

interval, for once the intermuscular tissue is invaded the progress is so rapid that one can actually watch it spread. There is no other condition affecting man capable of giving rise to radiographic appearances similar to those of this acute fulminating gas gangrene, but it should be noted that the earlier stage—that is, the isolated gas bubbles—may be simulated by the gas bubbles produced by the irrigation of a wound with hydrogen peroxide. The following is the history of a recent case of this nature.

FIG. 1.—Radiograph of the upper half of the thigh, showing infiltration of the musculature by gas bubbles in linear form.

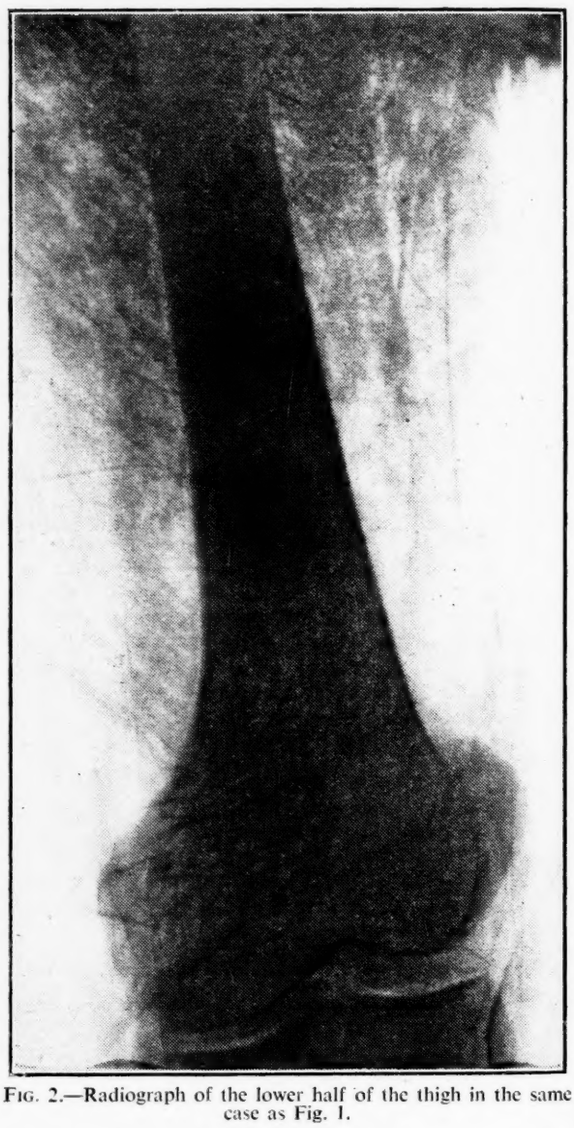

FIG. 2.—Radiograph of the lower half of the thigh in the same case as Fig. 1.

Case Report

At 1.10 p.m. on December 30, 1939, a man aged 39 was driving a horse lorry when the horse shied and he slipped off the lorry, sustaining surface abrasions of the antero-lateral aspect of the skin of the right thigh and knee. He was admitted to hospital at 1.30 p.m. On inspection the abrased surfaces were dirty. They were excised, cleansed, and stitched up, and an injection of 2,000 units of anti-tetanus serum was given. On the 31st he was apparently quite well, but in the evening complained of pain in the right leg. The possibility of gas gangrene was not suspected. When examined the following morning the limb was found to be considerably swollen and reddened, and a deep dark-bluish discoloration as of extensive bruising was present over an antero-lateral area some 18 by 14 inches. Gas crepitation was detected on palpation. An *x*-ray examination was made. The radiographs showed a large collection of gas in the subcutaneous tissues extending from the region of the great trochanter to the external femoral condyle. A smaller collection extended in the subcutaneous tissues to the middle third of the leg. More striking than this was the infiltration of the whole of the musculature of the thigh by myriads of gas bubbles in linear form, taking the direction of the muscle fibres, which appeared to be dissected by it (Figs. 1 and 2). These changes seemed to be spreading into the buttock and the anterior abdominal wall, an advance which appeared to extend while the limb was under observation. An injection of 10,000 units of *B. welchii* serum was given, but the gravity of the man's condition developed rapidly and at 2.15 p.m. of that day he died of the toxaemia.

After death the lesions appeared to spread and the whole swollen limb presented a very reddened appearance, except in those large areas which showed a dark bluish discoloration as of an extensive subcutaneous haemorrhage. An unusually stale smell was present during the examination.

The striking feature of this case of gas gangrene was the rapid fatal termination within a few hours in a man whose wounds were of the nature of abrasions, though no doubt associated with deeper contusions, which were radically treated in hospital by excision, cleansing with methylated ether, and stitching within an hour of the accident. This

unusual fatality gives rise to the question whether the simpler and less heroic measures for the treatment of an abrasion are not freer from risk of this infection. Excision and closure of the wound would appear to produce a suitable nidus for the development of anaerobic organisms. If such an event can occur in a patient having the advantage of hospital treatment and observation, the relative rarity of such untoward results in street accidents is surprising. That it can occur should be borne in mind by all who treat casualties, so that a careful watch may be kept on the progress of such lesions, penetrating wounds, and even the site of subcutaneous injections, for these have been recorded as the origin of these cases. As infection by gas-forming anaerobic organisms is detected earliest by radiography it is advisable to have radiographs taken of the area of the wound if pain or fever develops or if there is any swelling or unusual discoloration. The radiographs should be scrutinized for the presence of gas bubbles. Absence of these should not be taken as conclusive evidence that such infection has not occurred, but the radiographic examination should be repeated after an hour or so if the signs and symptoms persist or show any evidence of progress. If gas bubbles are detected suitable measures should be instituted immediately.

Treatment

The radiographs will have revealed the presence of any metallic foreign body, and if the primary hygiene of the wound has not extended to its neighbourhood the foreign body should be accurately localized as a guide to the surgeon during the subsequent radical cleansing of the track. If the radiographs indicate that the infection is of the acute fulminating type of gas gangrene, which as yet does not appear to have extended beyond operable limits, the question of amputation of the part may arise, and this would seem to be the proper procedure. Kelly, Dowell, Russum, and Colien (1938), who have paid particular attention to the *x*-radiation treatment of the condition, and for this purpose have collected the evidence from 140 cases, are strongly opposed to amputation. They state: "We cannot over-emphasize our opposition to amputation because of gas gangrene, and feel that anyone amputating or advocating the amputation of an extremity solely because it is infected with gas-forming organisms is definitely out of touch with the proper and conservative treatment of the condition." Their technique is given as follows:

"The thicker the part the higher the voltage and the more filtration is indicated, but since it is only necessary to treat over a period of three days, or at the longest five days, making the number of treatments vary from six to ten, no complications should arise from the use of 100 *r* per port per treatment, regardless of how many ports it may take, if the correct voltage and filtration are used—at least 1 mm. of aluminium in all cases. The ordinary precautions against radiation burns should be taken."

They advise that treatment should be applied twice a day, and consider that the irradiation may have some antitoxic effect. They further state that "the use of serum is not absolutely essential to recovery and its use should be conservative, avoiding serum sickness, which only adds to the patient's difficulty"; for "up to this time no patient has died of gas gangrene who has received a treatment [irradiation] in the morning and a treatment in the evening for three days over all the involved tissue."

With such testimony one might feel justified in vigorously prosecuting all cases in this way, but more than an element of doubt is aroused in their statement: "One should not become over-enthusiastic regarding the use of the *x* rays and neglect other measures. Surgery is commonly necessary in these cases and must be employed as indicated." How many of the cases treated by these measures were of the nature of those commonly seen in the great war and treated successfully by removal of the foreign bodies and adequate cleansing of the track one cannot estimate, but a more extensive investigation of the value of *x*-radiation in the cases which are of the acute fulminating type must be undertaken before it can be universally recommended. Until this evidence is forthcoming one would feel justified in recommending *x*-radiation treatment in all such cases in which the radiograph indicates that the infection has extended beyond reasonable bounds for amputation or in any other case in which surgery is contraindicated.

It is interesting to note that cattle suffer from a condition closely resembling the acute fulminating type of gas gangrene in man. The condition is known as blackleg, blackquarter, and quarter-evil, and by various other names. It appears to originate from an abrasion of the skin, its progress is very rapid, and the animal dies of toxaemia before the lesion has gone much beyond the bounds of the affected limb. Through the kindness of the late Sir John Robertson and Mr. E. Hothersall, chief meat inspector to the Birmingham Public Abattoir, I was privileged to see a number of these cases, and radiographs which I took in 1915 bear a striking resemblance to those cases of acute fulminating gas gangrene in man.

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EXPERIMENTS IN THE ACCELERATION OF WOUND HEALING

BY

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Those who, like myself, had the privilege during the last war of meeting Alexis Carrel at Compiègne have followed his subsequent work with the interest that arises from confidence in its integrity. It will be remembered that his studies in tissue culture and repair arose from and were associated with the technique of secondary closure of wounds when, after Carrel-Dakin treatment, the number of organisms in the wound discharge had been reduced to two or three per microscopical field. In 1916 Carrel and Hartmann published a paper on the cicatrization of wounds based on observations on animals; this confirmed findings, made in men in 1908, that the rate of repair was greater at the beginning than at the end of cicatrization and depended not at all on the age of the wound but on its size, being directly proportional to it.

Technique of Measurement of Wound Repair

The procedure of taking measurements is as follows. The surface of the wound is dried by filter-paper and a sheet of sterile cellophane is applied; the bare area is outlined by wax pencil on the cellophane, and this drawing is reproduced in ink on paper. From this the area is

estimated in square centimetres by means of a planimeter, and these measurements are repeated at intervals of four or five days. Carrel demonstrated that the value of the rate of cicatrization was geometric in character and could be expressed by a curve in which the time was carried in abscissae and the area in ordinates. This curve was expressed by du Noüy (1916) in a mathematical formula which is set out below; its clinical usefulness lies in the fact that it gives a yardstick wherewith to measure the progress of healing in a clean wound and the effect of different therapeutic measures on the rate of healing—for example, various antiseptics, chemicals, vitamin-containing ointments, tissue extracts, and even immobilization. The healing rate (see Graphs III and IV) is affected by the shape of the wound, the age of the patient, the existence of intercurrent disease, and, of course, by the presence of infection but not by the age of the wound.

Experiments with Embryonic Extract

In the course of his experiments in 1925 Carrel (Carrel and Baker, 1926) found that embryo-web porridge was effective in accelerating wound healing. This line of investigation was followed up by Dr. Albert Fisher, director of the Carlsberg Biological Institute of Copenhagen, who has succeeded in producing an embryonic extract which is sterile, stable, and easily applicable to the clean wound. Clinical experiments and observations with this substance have been carried out in several clinics in Copenhagen, especially in the Ortopaedisk Hospital by S. Kiaer (1927) and Nielsen, and a paper by the latter (Nielsen, 1939) must be acknowledged as the basis for this article. In this, after detailing the history of Carrel's observations and the du Noüy formula, Nielsen gives an account of controlled experiments on the healing of wounds in dogs carried out at the hospital and shows that the employment of the embryonic extract in dressing these wounds shortened the period of healing by an average of almost 32 per cent.

The embryonic material referred to has been named "epicutan." It is manufactured under Dr. Fisher's direction by Messrs. Lundbeck of Copenhagen, and was about to be marketed in this country before the outbreak of war. In May, 1939, Messrs. Lundbeck kindly provided me with enough epicutan to treat a considerable number of cases, details of four of which are here recorded. For Cases 1 and 2 the graph of healing under epicutan and the Carrel graph of normal epithelization are appended. These bear out the claim that epicutan reduces the time of healing by 30 per cent., and this is confirmed by clinical experience in my series of eighteen cases.

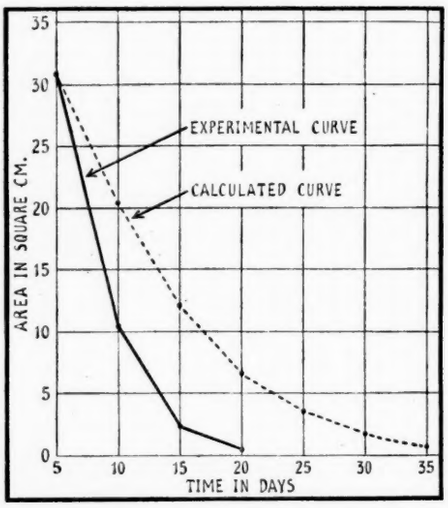
Case Reports

Case 1.—A french-polisher aged 19. First-degree burn of dorsum of hand; area of burn 2½ by 2 inches. Treated after débridement by spirit dressing daily for four days; on fifth day epicutan and gauze dressing; repeated on tenth, fifteenth, and twentieth days. Area completely covered by epithelium on twenty-fifth day; the normal healing time for an area of this size given by the Carrel–du Noüy formula is thirty-five days (Table I and Graph I).

Case 2.—A collier aged 26. Glancing wound of left leg, with ablation of area of skin 4¼ by 2½ inches. Eusol cleaning for five days, followed on the sixth day by epicutan–vaselin technique; repeated every four days. On the thirty-second day the area, with the exception of a spot the size of a sixpence in the centre, was completely covered by epithelium; by the Carrel–du Noüy estimation this area would have taken sixty-six days to heal (Table II and Graph II). My experience leads me to believe that it would have required skin-grafting.

TABLE I

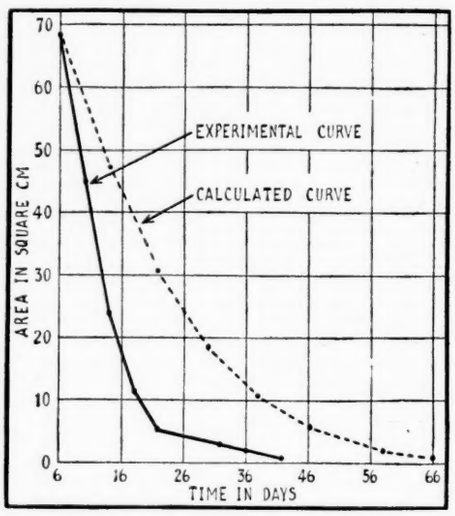
Time (days)	5	10	15	20
Area (sq. cm.)	32	10.4	2.4	0.5



GRAPH I.—The graph of healing under epicutan (Case 1, experimental curve) and the Carrel graph of normal epithelization (calculated curve).

TABLE II

Time (days)	6	10	14	18	22	28	32	36	42
Area (sq. cm.)	68	45	24	11.4	5.6	4	3.14	2.26	0.5



GRAPH II.—The graph of healing under epicutan (Case 2, experimental curve) and the Carrel graph of normal epithelization (calculated curve).

Case 3.—A shipyard worker aged 36. Injury to third and fourth toes of right foot; both toe-nails loose, and removed. Dressed for three days with eusol; on fourth day nail-bed of third toe was treated with epicutan and sterile vaselin gauze, the fourth toe with vaselin gauze only, using this toe as a control; re-dressed on ninth, fourteenth, and nineteenth days. On the twenty-third day the nail of the third toe was completely regenerated, while regeneration of the fourth toe-nail had barely reached the middle of the nail-bed.

Case 4.—This case, that of an infant, deserves fuller description. The history was that at 1½ months the patient suffered first and second degree burns of the head; he was admitted to hospital on December 20, 1937, and remained for two months; almost half the total area of scalp was denuded of epithelium. In February, 1938, the child developed measles and was discharged to an isolation hospital, and later attended the out-patient department at the former hospital. He was readmitted on several occasions, and in June, 1939, was admitted with the intention of grafting being performed. At

that time the bare area measured $3\frac{5}{8}$ by $2\frac{3}{8}$ inches; for eleven months it had remained stationary, and was dirty, offensive and covered with pus.

On July 29 the condition of the scalp was as shown in Fig. 1. Epicutan-vaselin technique was now begun, and a

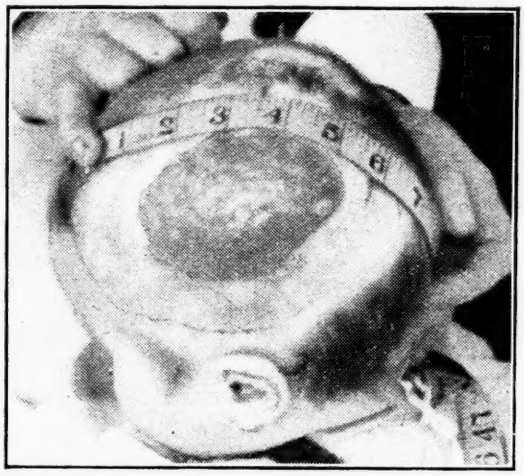


FIG. 1.—Case 4. Condition of the wound on July 29, 1939, before treatment with epicutan.

FIG 2.—Case 4. Condition of the wound on October 9, 1939.

removable plaster-of-Paris cap was fitted to prevent the child rubbing the head on the pillow Dressing was renewed every five days; the condition improved steadily until on October 9 it was as shown in Fig. 2. With the exception of two areas the size of a shilling the whole wound was covered with epithelium. This is a remarkable case, as attempts to obtain epithelization had failed; the scald had existed for almost a year and a half and grafting seemed inevitable. Interruption to repair has now occurred, as the child has developed whooping-cough. Graphs of cases shown me in Copenhagen exhibited a noticeable delay in healing when an intercurrent disease supervened.

Mathematical Formula Used in Producing the Graphs

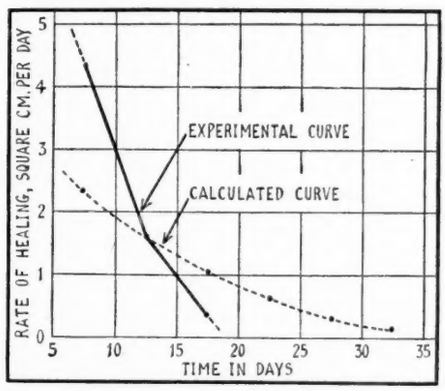
Du Noüy's formula from which the graphs have been obtained is $S_n = S_{n-1} . [1 - i(t + \sqrt{nt})]$; where S_{n-1} equals the wound area at a known time; S_n equals the wound area t days later; t equals the intervening time; n equals the number of time periods; and i equals a variable factor, depending only on the size of the wound and the age of the patient.

Du Noüy in 1919 published a table based on several hundred wound measurings made on men, showing that the factor i can be found when the size of the wound and the age of the individual are known. By measuring the wound area S_{n-1}, and *substituting* in the above formula S_n, the size of the wound t days later can be calculated. Then, by using this value for S_n, and *substituting* in the formula as S_{n-1}, a second value for S_n can be found which will represent the wound area $2t$ days later. By repeating along these lines a series of values for the wound area at intervals of time can be calculated. These values are shown in the graph as a dotted curve. The line curves show the observed results.

Graphs III and IV give the curves showing the *rate of healing* in Case 1 and Case 2 respectively. The appropriate tables are shown as Table III and Table IV. It

TABLE III.—*Case 1*

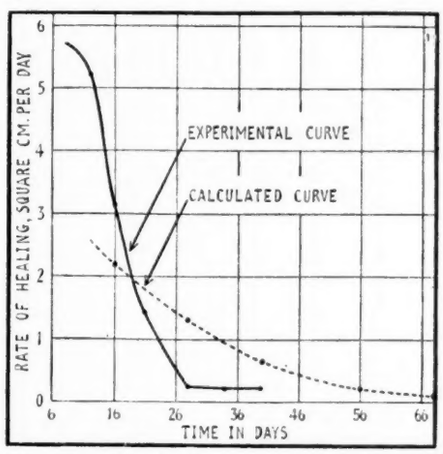
Rate of healing (sq. cm. per day)	4.32	1.60	0.38
Time (days)	7.50	12.50	17.50



GRAPH III.—The daily healing rate in Case 1 (experimental curve) and the normal daily healing rate (calculated curve).

TABLE IV.—*Case 2*

Rate of healing (sq. cm. per day)	5.75	5.25	3.12	1.45	0.25	0.22	0.29
Time (days)	8	12	16	20	28	34	39



GRAPH IV.—The daily healing rate in Case 2 (experimental curve) and the normal daily healing rate (calculated curve).

will be noticed that after the first few applications of the embryonic extract the curve of the rate of healing of the observed cases falls below that of natural healing. This suggests that possibly the wound area has become resistant to epicutan and the response is slower, and it may be advisable in such circumstances to withhold the treatment for one of the time periods, and then to resume the treatment—that is, to stop the application of epicutan

at the point where the observed rate of healing intersects the calculated rate.

It will be observed that by this formula it is possible to predict how long a wound will take to heal, provided the area and shape of the wound and the age of the patient are known; and, by comparing the curve of actual measurement at similar t intervals, to ascertain whether the adoption of various techniques of treatment is actually effective in reducing the time of healing.

In the cases quoted, in addition to the use of the embryonic tissue extract, I have employed immobilization of the wound-bearing member, since this alone appears to have an influence in inhibiting a flare-up of infection which would interfere with repair; but immobilization alone does not appear directly to influence healing time.

Biological Considerations

Fisher's investigations show that the protein derivative of embryonic tissue is not of the nature of a hormone but exists intracellularly, and experimental and clinical observations indicate that it is present in all embryonic tissue but disappears rapidly with the close of embryonic life. It is permissible to surmise that at this biological epoch, when the passive aggregation of cells which we recognize as an embryo develops to a living entity and acquires individuality, it throws off its dependence upon undifferentiated cell activity and begins to elaborate the ontogenic hormones of its progenitors. Thus, for example, in the mammal the influence of the embryonic protein is replaced by that of the chondrotrophic growth hormone elaborated in the pars anterior of the pituitary body.

Epicutan is a protein derivative of embryonic tissue adsorbed to kaolin powder; the wound is powdered and covered with sterile gauze, and dressed every five days. The value of a preparation which by accelerating healing time will shorten convalescence by one month in three is obvious in the present national circumstances. A series of controlled experiments is being carried out at the Strangeways Research Laboratory, Cambridge.

Summary

The basic work of Carrel in tissue culture is recalled, and the technique employed in clinical experiments is detailed.

Case histories are given which demonstrate marked acceleration of wound healing under the influence of embryonic tissue extract.

The equations and graph curves referable to two of the quoted cases are set out; these confirm mathematically the clinical deductions drawn from these cases.

A note as to the form in which the tissue extract is available commercially is added.

I have already referred to the paper by Erfurth Nielsen, from which much of the technical detail, not to make too fine a point, is "cribbed." My indebtedness to Mr. J. M. Russell, lecturer in mathematics at the Technical College, Sunderland, for his kindness not only in providing the graphs but in instructing and explaining the attendant mathematics to me, I most gratefuly acknowledge.

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The Swedish Health Office has issued a circular warning practitioners to exercise the greatest care in prescribing slimming cures, as their use in many cases has caused digestive and ocular disturbances.

THE KAHN TEST: A SIMPLIFIED TECHNIQUE

BY

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Many years' experience of this test carried out on upwards of a hundred thousand specimens has convinced me that (1) it can be performed more quickly and easily than as described by its author; (2) it is highly specific and sensitive as controlled by parallel Wassermann tests and clinical observation; and (3) it is not one which can be done by any medical man without previous training. Nevertheless the test is simpler than the Wassermann and requires fewer reagents and controls; the reading is less easy, but this and the technique of setting it up can be mastered in a comparatively short time by anyone of average intelligence. Moreover, it is a more suitable test than the Wassermann where small numbers of specimens have to be examined or where full pathological facilities are not available, and it is of great value as a check on the more complicated complement-fixation reaction. In addition it is particularly useful where a quick result is required: a report can be given within a few minutes after the specimen and necessary control sera have been inactivated.

Procedure

Tubes as described by Kahn himself are used, but ordinary Wassermann racks can replace the special three-tube racks. Instead of numerous finely graduated pipettes all that is required are two quill ones made by drawing out in the flame of a blow-lamp ordinary glass tubing with an external diameter of about 0.8 cm. One of these should be coarse—internal diameter roughly equal to that of the lead of an ordinary pencil—and the other fine. The coarse one should be fitted with a teat, a volume of about 0.15 c.cm. of fluid drawn up into it, and a mark made with a grease pencil at the upper level of the fluid; this is used for pipetting all sera. The fine one is passed through hole No. 54 in a Starrett wire gauge and cut off with a file at the point where it emerges. It will be found that twelve drops of diluted Kahn antigen delivered by holding this pipette vertically are roughly equal to one volume delivered from the coarse pipette. Sixty "drops" are weighed against five "volumes," and the mark on the coarse pipette is altered as necessary until the weights are exactly equal. In the test proper the three tubes used by Kahn are reduced to two—that is, the 1 to 12 and 1 to 6 of antigen and heated serum respectively.

Technique of Test.—Two tubes are used for each serum, including positive and negative controls, and two for antigen–saline controls. Into the back row one drop and into the front row two drops of suitably diluted and ripened antigen are delivered with the antigen pipette; one volume (0.15 c.cm.) of each serum to be tested is then added to each pair of tubes, the pipette being rinsed out two or three times in saline between any two consecutive sera and the same pipette being used throughout. The rack containing the tubes is now shaken for three minutes in the usual way (by hand if no mechanical shaker is available) and saline (roughly 1 c.cm.) added to each tube. Results are read with a hand lens with a magnification of about $\times 6$. For this purpose a slit-lamp as used for the sigma test is most convenient, but any shaded light with a dark background answers the purpose.

Results

These are recorded as *positive* if both tubes show definite flocculation, *negative* if neither tube shows any appreciable flocculation, and *doubtful* if only one tube shows flocculation; if any doubt arises in regard to any given tube it should be compared with the positive, negative, and antigen control tubes.

It is claimed that the above method compares favourably with that described by Kahn (1928) himself in:

Simplicity.—Only two pipettes are required for a whole batch of tests and two tubes for each serum.

Speed.—Antigen certainly and serum probably can be delivered into the tubes much more quickly.

Accuracy.—Delivering the antigen in a series of drops is at least as accurate as and far less troublesome than the employment of pipettes graduated to 0.0125 c.cm.

Reading of Results.—Few people have sufficiently good eyesight to read results without artificial light and a lens.

Recording of Results.—Each tube is read as positive, negative, or doubtful, and no system of taking a mean of a number of pluses is needed.

Comment

It is not suggested that the Kahn test should replace the Wassermann. As a routine the two tests should be used together; but in small laboratories, and particularly under war conditions, it is useful to have a test which requires a minimum of apparatus, is simple and comparatively fool-proof, and can be carried out by anyone who has had a reasonable amount of practice. The Kahn test as described above fulfils all these conditions and, moreover, is highly specific and has been made as sensitive as is consistent with specificity. It is not recommended for testing cerebrospinal fluids.

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PRIMARY LATERAL SCLEROSIS OF SOUTH INDIA

LATHYRISM WITHOUT LATHYRUS

BY

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Anyone who has the opportunity of working in a large general hospital in South India is bound to be impressed with the large number of unusual cases of paraplegia that present themselves for treatment, but few if any reports on the condition exist in medical literature.

The cases recorded below were all seen at the Madras General Hospital. Whenever possible the patients were admitted so that specimens of cerebrospinal fluid could be examined. Some declined to come into hospital, or after admittance refused further examination, so their case reports are incomplete. The main clinical findings are shown in the table overleaf. In every case a complete neurological and general examination was carried out, and the findings were normal unless indicated as otherwise.

Clinical Findings

The patients were almost exclusively male. This is of significance, as although considerably more male patients present themselves for treatment the proportion is nothing like that indicated here, where only one female is shown. Further, the patients were almost all between 19 and 45 years old. The type of paralysis seen in a typical case consisted of a spastic paraplegia of the lower limbs, with marked increase of muscular tone, great increase of the deep reflexes and extensor plantar reflex, and often the presence of ankle or patellar clonus. The sensations of the limbs were in no case affected. The impression on first examination was that of a typical pure paraplegia due to a lesion of the pyramidal tracts fairly low down in the cord. However, certain factors in these cases are very abnormal; thus it is seen that in no fewer than twelve of the twenty-one cases the abdominal reflex was present and normal, and in a similar number, though not always the same cases, the cremasteric reflex was also found to be present. It is extremely difficult, if we accept the classical interpretation of neurological signs, to explain this phenomenon; for, though by imagining a lesion in the pyramidal system to be limited to the lowest part of the lumbar enlargement of the cord it is possible to account for the presence of a normal abdominal reflex, it is still unlikely that we would obtain a normal cremasteric response. In Cases 2 and 11, where the disease process had ascended high enough in the spinal cord to affect the deep reflexes of the arm, normal superficial reflexes were obtained in the abdomen. (This matter will be referred to later.)

In considering the differential diagnosis of these cases the usual possibilities could be easily excluded. Disseminated sclerosis, the commonest cause of paraplegia at this age, in spite of the paretic type of gold curve obtained in the cerebrospinal fluid in six of the cases, was first excluded because of the complete absence of cranial nerve involvement and the absence of any intention tremor or other characteristic signs. The possibility of traumatic or granulomatous compression of the cord was excluded in the first few cases by radiological examination, and in later cases by the complete absence of other signs of compression. The possibility of the nerve condition being due to compression of the cord by calcified vertebral ligaments was also excluded. Syringomyelia and amyotrophic lateral sclerosis were excluded by the absence of any sign except the paraplegia. Subacute combined sclerosis of the cord was similarly excluded, and we were left with a diagnosis of some type of "primary" lateral sclerosis.

Erb's Paralysis

Lateral sclerosis was first described by Erb in 1875, and he remarked on the fact that it was equally common in young and old, and that the paralysis was of the upper motor type limited to the lower limbs, unassociated with sensory changes though sometimes preceded by a tingling sensation in the legs. In his first series of twenty to thirty cases there were two which had in addition certain difficulties with micturition. The pathology of the condition was not investigated for some years, and then showed, as would be expected from the symptoms, a sclerosis of the crossed and uncrossed pyramidal tracts.

In 1892 Erb described an exactly similar clinical syndrome, now known as Erb's syphilitic paralysis, which he ascribed to a luetic infection; though, as Fortes and de Magalhaes (1933) point out, Erb based his hypothesis of the syphilitic origin of the syndrome on clinical history and the presence of old penile scars, the far more reliable serological tests at that date not being available. In addition to Erb's paraplegias Strümpell has described a familial type associated with syphilitic infection (Fortes and de Magalhaes, 1933), and Trabaud and Mredden (1932) have reported cases of familial paraplegia with symptoms similar to Erb's paralysis, and to the cases shown in the table, as occurring in Arabs in Syria. Both

Table showing Main Clinical Findings in Cases of Primary Lateral Sclerosis

No.	Age and Sex	Duration (years)	Wassermann		Lange's Gold Curve	Onset	Cranial Nerves	Reflexes						Clonus	Sensations
			Blood	C.S.F.				Upper Limb	Abdomen	Cremasteric	Patella	Ankle	Plantar		
1	23, M	15 days	–	–	2111000000	Pain and tingling in legs	N	N	N	N	++	+	Flex. L Ext. R	++	N
2	29, M	2	–	–	4222200000	Fever.. ..	N	+	N	N	+	+	Ext.	–	N
3	19, M	3/12	Not done			Tingling ..	N	N	N	–	++	+	Flex.	+	N
4	40, M	1/12	–	–	4433000000	Numbness and fever	N	N	–	–	++	+	Ext.	+R	N
5	40, M	1/12	–	–	4433000000	Fever.. ..	N	N	–	–	+	+	Ext.	–	N
6	40, M	3/12	–	–	–	Sudden with incontinence	N	+	–	N	++	+	Flex.	+	N
7	40, M	6/12	–	–	4433000000	Weakness ..	N	N	–	N	++	+	Ext.	–	N
8	30, M	6/12	–	Not done		Sudden at night	N	N	N	N	+	+	Nil	+R	N
9	45, M	3/12	–	–	–	Sudden at night	N	N	N	N	+	+	Flex.	–	N
10	25, M	2/12	–	–	–	Fever.. ..	N	N	–	N	++	+	Ext.	+	N
11	29, M	2	–	–	4222220000	Fever.. ..	N	+	N	N	+	+	Ext.	–	N
12	19, M	2/12	–	Not done		Sudden ..	N	N	N	N	+	+	Nil	–	N
13	25, M	2/12	Not done			Gradual ..	N	N	N	N	+	+	Ext.	–	N
14	34, M	6/12	Not done			Gradual ..	N	+	–	–	+	++	Ext.	++	N
15	21, M	1/12	+	++	Not done, specimen lost	In a week ..	N	+	–	–	+	+	Ext.	+	N
16	40, M	6/12	–	Not done		Tingling ..	N	+	–	–	+	+	Nil	–	N
17	45, M	3/12	–	–	–	Sudden at night	N	N	N	N	+	+	Flex.	–	N
18	25, M	2/12	–	–	–	Gradual ..	N	N	–	–	+	+	Ext.	+	N
19	11, F	2/12	–	–	–	Gradual ..	N	N	N	–	++	+	Ext.	+	N
20	40, M	3	Not done			Gradual with tingling	N	N	N	N	+	+	Flex.	+	N
21	10, M	2	–	Not done		Gradual ..	N	N	N	N	+	+	Flex.	+	N

+ = Positive or present. – = Negative or absent. N = Normal. R = Right. L = Left. Flex. = Flexor. Ext. = Extensor.

these authorities found the abdominal and cremasteric reflexes to be normal, though all other classical signs of paraplegia were present.

None of the authorities consulted in the literature give precise information on the serological condition of the blood or cerebrospinal fluid in Erb's paralysis, yet a positive Wassermann reaction might be expected in a high proportion of such cases. In the series here described, which includes all the cases of spastic paraplegia reporting to my unit during the period of investigation, only one case of a positive blood and cerebrospinal fluid Wassermann was seen. This fact shows conclusively that the cause of the syndrome could hardly have been a nervous syphilitic infection. Further support to this view is given by the fact that in a recent report issued from the Vizagapatam Medical College, reviewing the cases of nervous syphilis seen in the north of Madras Presidency, Erb's syphilitic paraplegia is not mentioned. Further, Popow (1931) also came to the conclusion that pure paraplegias due to syphilis are uncommon.

Lathyrism

By process of elimination we were led to the conclusion that the syndrome of the cases of paraplegia seen in Madras was identical with that of lathyrism. Lathyrism is a condition of paraplegia affecting the lower limbs almost exclusively, and is associated with varying degrees of inability in walking, considerable increase in the tone of the muscles of the lower limbs, the presence of extensor plantar reflexes and possibly clonus, complete absence of sensory changes, and sometimes lack of control over the bladder. The onset may be gradual or sudden, and males are affected almost exclusively. Outbreaks occur on a large scale in Northern and Central India and also to a less extent in Syria, France, and Italy. The disease is said to be always associated with eating of the seeds of a vetch, *Lathyrus sativus*. The symptoms develop only in times of famine, when this grain forms a very high proportion of the diet of the population.

The condition of lathyrism was first investigated on a large scale in India in 1904 by Buchanan, who described cases occurring in the United Provinces in 1896 and 1902; the condition of "epidemic spastic paralysis" was present in up to 13 per cent. of the inhabitants in certain villages of these provinces. McCarrison (1926) reported that he saw many cases in the Gilgit Agency of Kashmir in 1908, the disease occurring exclusively in males and the diet consisting of a high proportion of *L. sativus*. Trabaud and Mouhärram (1932) as a result of their investigation of cases of lathyrism in Syria came to the conclusion that *L. sativus* is responsible.

The nature of the substance in the lathyrus grain producing lathyrism has given rise to considerable speculation. Dilling (1920) succeeded in extracting two alkaloids from *L. sativus* which he considered were responsible for the disease. On the other hand, McCarrison and Krishnan (1934) extracted an alkaloid which they state proved non-toxic. McCarrison (1926) specifically mentions that the grains eaten by the patients he saw were grossly infected with fungus, and McCombie Young (1927) noticed that the condition of the grain consumed was generally very bad. Howard, Simonsen, and Anderson (1923) carried out an extensive examination of the lathyrus grain and were unable to isolate any alkaloid from *L. sativus*. They found, however, that the grain was almost invariably contaminated with the seeds of *Vicia sativa*, from which they were able to extract a highly toxic alkaloid. That moderate quantities of *L. sativus* in the diet have little or no pathological effect has been emphasized by McCombie Young (1927), who found that in villages where a good mixed diet was obtainable the paraplegias were not seen, and this fact has also been remarked on by Stockman (1929) and other workers, though, on the other hand, Trabaud states definitely that even a few grains are dangerous. The artificial production of lathyrism has, in spite of various statements to the contrary, never succeeded (Anderson, Howard, and Simonsen, 1925; Stott, 1930; McCarrison and Krishnan, 1934).

Conclusion

It should perhaps be mentioned that peas of any type take a very small place in the diets of South India and, so far as is known, *L. sativus* is never consumed. In spite of this I am of the opinion that the nervous syndrome described above is identical with lathyrism, and that, in view of the conflicting evidence, there is absolutely no reason why the condition described as lathyrism should be necessarily connected with *L. sativus* or any other grain. McCombie Young reported that it might be due to vitamin A deficiency, and states that in villages where the disease was seen night-blindness was common. He quotes McCollum (1923) as having this opinion, and a similar suggestion has been made more recently by E. Mellanby (1934), while Einarson and Ringsted (1938) have described a degeneration of the motor tract due to vitamin E deficiency. Stockman (1932) says the disease is not due to vitamin deficiency.

However, the discovery of these cases, which clinically are identical with lathyrism, occurring in the Madras Presidency, where the diets are deficient in vitamins and in proteins, does add weight to the possibility of the condition being due to the absence of some factor from the diet. At the time of examination the patients showed no obvious signs of known vitamin deficiency disease, but the earliest case was seen fifteen days after the onset of symptoms. If a deficiency is responsible the possibility of a lack of one or more of the amino-acids should be considered, as the Madras diets are notoriously low in proteins. In this connexion the work of Basu *et al.* (1937a, 1937b) deserves note, as they report that the grains of *L. sativus*, though rich in proteins, are very deficient in tryptophan, and as the lathyrism syndrome is undoubtedly prone to occur where this grain forms the bulk of the protein part of the diet the virtual absence of this essential amino-acid might possibly produce the nervous degeneration responsible for the disease.

Summary

A syndrome of upper motor nerve paralysis mainly affecting the legs but occasionally ascending higher is described.

The condition is considered to be identical with lathyrism, though *L. sativus* does not enter into the diets.

The presence of a normal abdominal and cremasteric reflex in the paraplegia is noted and discussed.

The possibility of the disease being due to tryptophan deficiency is mentioned.

It is suggested that lathyrism is a deficiency disease not necessarily associated with *L. sativus*.

I must thank Lieutenant-Colonel M. M. Cruickshank, I.M.S., superintendent of the Madras General Hospital, for permission to publish this paper and for the assistance and facilities he gave me in producing it.

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Clinical Memoranda

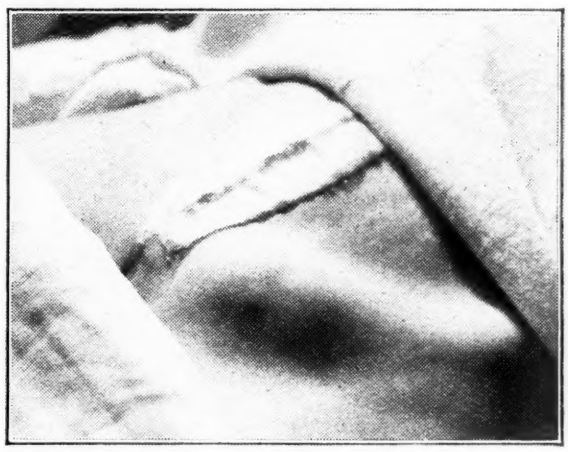
Aerocele of a Hernial Site after Radical Operation

The following case appears to be worthy of record in that a search of recent literature has revealed nothing similar.

Case Report

Mrs. X, aged 41, was admitted to hospital complaining of a lump in the left groin. On examination she was found to have a reducible femoral hernia. The patient was under the care of Mr. A. K. Henry, who operated.

The patient was placed in the semi-Trendelenburg position. A midline extraperitoneal approach for femoral herniorrhaphy was employed (Henry, 1936). The peritoneum was stripped



from the right side of the pelvic wall and an excellent view of the whole of the hernial region was obtained. The peritoneal sac could be seen passing through the femoral ring. The sac was adherent to its coverings in the canal and also at the margins of the femoral ring. Blunt dissection delivered the sac, which was excised after doubly ligating the neck. A flap from the aponeurosis covering the pectineus was raised and sutured to the hinder margin of the inguinal ligament. In view of the excellent exposure obtained a very firm closure of the defect was secured, leaving only a potential crevice between the edge of the flap and the femoral vein. The patient was then replaced in the horizontal position and the abdomen closed.

The following morning a swelling was noticed in the groin which at first appeared to be a recurrence of the hernia (see photograph). In size, shape, and position it coincided with the original swelling; it was, however, not reducible. On percussion not only the swelling but also a surrounding width of two inches was markedly resonant. On listening with a stethoscope we heard sounds which appeared to be intestinal —sounds, faint at first, that gradually reached a crescendo and then died away. More careful auscultation revealed, however, that these were due to passing cars and buses, and that all extraneous noises were clearly transmitted through the swelling. It is worth remark that nowhere was there any of the peculiar

tactile crackling sensation that is given by ordinary surgical emphysema.

In view of the firm repair of the hernia the possibility of early recurrence was ruled out, and the swelling was diagnosed as a collection of air filling the space previously occupied by the hernial sac. A vertical incision was made over the swelling under local anaesthesia, and the tissues were carefully incised. As soon as the femoral canal was opened air escaped and the swelling subsided. The wound was closed and a firm pad applied over the femoral canal to prevent refilling.

Convalescence was uneventful, and when the patient was last seen by me, five weeks after operation, both scars had healed perfectly and no abnormality was noticed in the femoral region.

Mr. Henry has used the midline approach for femoral herniorrhaphy for the last four years. Neither with this approach nor with any other has he ever encountered a similar complication.

The obvious explanation is that a volume of air was trapped extraperitoneally when the wall of the abdomen was closed with the patient still in the Trendelenburg tilt. When the patient resumed the horizontal position and the peritoneum fell back into place this air was forced down into the canal past the edge of the flap that covered the femoral ring. A safeguard would be to lower the patient before closing the abdomen, though analogy with aerocele purposely produced by ventriculography makes it unlikely that the collection of air in hernial sites would be a dangerous complication of herniorrhaphy: the air would probably be absorbed in a short while without operation. The case presents, however, an interesting problem in differential diagnosis.

I am grateful to Mr. A. K. Henry for his permission to report this case. My thanks are also due to Professor G. Grey Turner and Dr. W. Daley for permission to publish it.

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Herniotomy at the Age of 93

The following case seems worthy of being placed on record in view of the extreme age of the patient.

CASE REPORT

A man aged 93 was admitted to Mr. Pirie Watson's wards, Royal Infirmary, Edinburgh, at 9 p.m. on July 2, 1939, with a history of strangulated right inguinal hernia. He had had the hernia for about twenty years, and controlled it by a truss; but it had come down at 9 a.m. that day and could not be replaced as usual. It was now painful.

On examination the patient was a thin old man. He was not vomiting, but was in considerable distress with a large irreducible hernia in the right inguino-scrotal region, the left inguinal region being normal. It was decided to operate at once. Morphine, 1/4 grain, and atropine, 1/100 grain, were given, and half an hour afterwards the patient was placed on the operating table and received an additional 1/6 grain of morphine. Local infiltration of the inguinal region as described by Ogilvie (1937) in Maingot's *Postgraduate Surgery* was employed, using 1 per cent. novocain. An incision was then made half an inch above and parallel to the mid-third of Poupart's ligament centring on the internal abdominal inguinal ring—that is, the incision advocated by Mr. G. L. Chiene (1907). It was found necessary to open the whole of the inguinal canal, and on cutting the apex of the external inguinal ring the tumour, which extended one inch beyond the ring, was easily freed, and the contents with a gurgle reduced themselves spontaneously. The sac was then dissected up in the usual way for oblique inguinal hernia, and the deep epigastric vessels exposed medial to the neck. The sac was opened, and the patient, who had stood the operation very well so far, now started to vomit. It was considered that the vomiting might be due to either (1) the repeated dose of morphine, (2) a "reduction *en bloc*," or (3) traction on the peritoneum when exposing the neck of the sac. Haemorrhagic fluid typical of intestinal obstruction welled out of the open sac as the patient strained. The neck of the sac was narrow and just admitted the examining finger, which was now passed into the general peritoneal cavity and swept round. Nothing abnormal was felt. The neck of the sac was transfixed and the redundant portion cut away. On the internal aspect of the neck of the sac was a whitish thickened ring, an evident attempt at natural repair; there was no adherent omentum. The sac walls were thickened and somewhat inflamed. A repair of the canal was then carried out. The atrophic internal oblique and conjoint tendon were stitched in front of the spermatic cord, and the external oblique and skin reunited with interrupted catgut and silkworm-gut sutures respectively. No drainage was employed. The vomiting ceased shortly after return to bed. It had probably been due to the traction on the peritoneum when exposing the sac.

The patient has made an uneventful and uninterrupted recovery, the wound healing by first intention. Dr. Lowell Lamont has been treating him during the past five years for pernicious anaemia, and while in hospital he was therefore given 2 c.cm. of anahaemin intramuscularly as a maintenance dose.

A brief search into some of the literature on hernia has not revealed a comparable case. Mitchell Banks's (1893) oldest patient out of 168 operated on was aged 77; Macewen's oldest was 80, in a series of eighty-one (1887); Turner's (1933) oldest was 76, in a series of sixty-five operations; Burdick and Higinbotham's (1935) oldest case was 80, in a series of 200 inguinal hernia operations. Gray (1932) gives no age limit in twenty-five patients treated by injection. Some of the large American series—for example, Bull and Coley's (1907) 2,000 operations; Coley and Hoguet's (1918) review of 8,589 cases; Erdman's (1917) 148 cases—give no age limit. Lincoln Davis's (1916) oldest in his analysis of 1,500 cases was 77. Paul Berger (1896) in 9,946 observations of hernia cases noted one patient over the age of 90, a man with bilateral inguinal hernia, but did not mention if an operation was performed. Macready's (1893) statistical tables of 20,999 hernia cases contain no patient over the age of 90.

It would be interesting to hear of a similar or older case. The above history certainly bears out our chief's dictum: "Put not your faith in trusses. Old age is no contraindication to herniotomy." Our patient, who has no chronic cough or urinary difficulties, was told at 73 that he was too old for operative repair of his hernia. The case also emphasizes the benefit of local infiltration anaesthesia.

We are indebted to Mr. Pirie Watson for permission to publish this case, and for many hints in recording it.

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Reviews

DISEASES OF THE LARYNX

Les Maladies du Larynx: Clinique et Thérapeutique. By G. Canuyt. (Pp. 814; 326 figures; 10 plates. 270 fr.) Paris: Masson et Cie. 1939.

The firm of Masson have added a fourth volume to the series which already comprises diseases of the nose, of the pharynx, and of the oesophagus. The new volume, *Les Maladies du Larynx,* is edited by Professor G. Canuyt, who has actually written by far the greater part of it, and with him are associated Drs. Truffert, Tarneaud, and Wild. They have also called upon a number of their colleagues for special chapters. Outstanding among these are the chapters on laryngocele by Dr. Rendu of Lyons, and on chronic laryngitis by Professor Rebattu, also of Lyons. In relation to radiology the assistance of Dr. Gunsett, director of the cancer centre in Strasbourg, has been sought, and he has collaborated especially in the sections on tomography and on deep radiotherapy for malignant disease. The most remarkable results are claimed for this, for in fifty-four cases treated between 1922 and 1932 there have been twenty-three cures—that is, 42.5 per cent. of the cases have remained well for more than five years. Of these, two cases have survived fifteen years, one thirteen years, one ten years, two nine years, and one eight years. These results are far superior to those of any other reliable reporter. At the same time the surgical treatment is fully described, and it is emphasized that the choice of treatment is an individual matter for each case.

The chapter on tuberculosis of the larynx would have been written by the late Professor Reverchon but for his untimely death; it comes now from the editor himself with the collaboration of Dr. Didier of Lille, a former pupil of Professor Reverchon. This chapter, which occupies just a hundred pages, is quite remarkable; it begins with a historical summary and goes on to present an account in which detail, illustration, and scholarship are skilfully combined. Among other sections especially worthy of note are one by Dr. Haslinger on direct examination of the larynx, of which he is an acknowledged master, and another by Dr. Tarneaud entitled "Les Maladies de la Voix." In this Dr. Tarneaud not only describes the use of the stroboscope for examining the movements of the vocal cords, but he introduces an apparatus called the stroborama, which includes a kind of speedometer whereby the sounds or notes emitted throughout the musical scale can be related to the movement seen during stroboscopic examination.

This volume in no respect falls below the standard created by the previous volumes of the series, and the editor with his associates is to be congratulated upon a notable addition to the literature of laryngology.

CLAUDE BERNARD

Claude Bernard, Physiologist. By J. M. D. Olmsted, Ph.D. (Pp. 318; 7 plates, one in colour. 15s. net.) London: Cassell and Co. 1939.

The name of Claude Bernard is a household word wherever the language of physiology is spoken, yet his biographers hitherto have been few and, with the exception of Michael Foster, unsatisfactory; Dr. Olmsted's definitive study is therefore very welcome. Born in 1813, Claude Bernard was, like his distinguished scientific contemporaries Ampère and Pasteur, a Burgundian; he hated travel and always returned with delight to his pleasant native countryside. He had serious handicaps—a legacy of debts, an unhappy marriage, a laboratory such as no research student would tolerate to-day; ineffective as a lecturer and suffering from recurrent ill-health, he also encountered opposition at every stage of his career. Yet, finding French medicine almost entirely empirical, he was able to leave it founded on scientific principles, and is regarded as the outstanding physiological genius of the nineteenth century.

But this is to anticipate. Dr. Olmsted divides his book into three sections, dealing respectively with Bernard's life, work, and philosophy. This has the disadvantage of involving some repetition, for the three aspects are inevitably intertwined; true, it enables the reader to choose the particular aspect in which he is interested, but if it encourages him to neglect the rest he will be the loser. Starting as a chemist's assistant, Bernard's real ambition was to be a dramatic author, but fortunately for us he philosophically accepted the verdict of a distinguished critic: "You have done some pharmacy; study medicine. You have not the temperament of a dramatist." Entering the medical school in Paris he came under Magendie, a gruff and alarming personality, who speedily discovered merits which were hidden from his fellow students. Bernard owed all his opportunities to Magendie, but Dr. Olmsted brings out clearly the mingled admiration and jealousy with which the master regarded the pupil destined to surpass him.

Bernard strictly followed Harvey's injunction to seek out the secrets of Nature by way of experiment, and re-echoed John Hunter's maxim, "Don't think; try," thus denying the scientific use of the imagination while subconsciously employing it to great advantage. He defines his own procedure thus: (1) the chance observation; (2) the idea is born to the mind; (3) the reasoning which led to the devising of an experiment; (4) the observation of the result; (5) the devising of new experiments which eventually lead to proof. This is rather different from A. N. Whitehead's cynical saying that "an experiment is nothing else than a mode of cooking the facts for the sake of exemplifying the law."

Dr. Olmsted regards Claude Bernard's great discoveries as (1) the functions of the pancreas in digestion, (2) the glycogenic function of the liver, (3) the vasomotor system, (4) the action of certain poisons, notably curare and carbon monoxide—a splendid harvest. Yet, as he points out, there were many observations, some of which we may think would have secured fame for a lesser man, such as those on the chorda tympani, the site of the secretion of acid in the stomach, muscle physiology, and animal heat, even though on the first two there were serious inaccuracies in his conclusions. Bernard was no exception to the general rule that a man's most original observations are made in earlier life—all his great discoveries were made in his first ten years at the Collège de France; but he also exemplifies the fact that in later life generalizations founded on personal experience may be possible and valuable. Thus Bernard's generalization on internal secretion has led to one of the chief medical interests of this century, while the significance of his views on the constancy of the internal environment has only recently begun to dawn on us. Indeed, as our author points out, it entirely escaped Michael Foster, a man of wide vision and clear insight. In these respects Bernard was too far ahead of his times. On this account the third section of the book before us, entitled "Speculative Contributions," is worthy of careful study, for in it we can see the forwardly directed vision of the man who nevertheless distrusted speculation.

When he was 51 the quondam chemist's assistant was introduced to the salon of the Empress Eugénie at Compiègne, where he attracted the attention of Napoleon so much that he gave orders, in the best tradition of the fairy tale, that Bernard should have whatever he wanted. Characteristically he asked for well-equipped laboratories, whereupon he was informed that the Emperor had in mind a more personal gift. He said he would like a laboratory assistant—not an exacting fairy gift—and received it in the form of Paul Bert, who became well known as his faithful disciple. Unfortunately the Emperor also lured him into politics, for which he was unsuited.

Dr. Olmsted brings out two points that are new to us: one the correspondence with Madame Raffalovich, which provides almost a diary of the later years of Bernard's life; the other the posthumous controversy arising from Berthelot's publication of his notes on fermentation, which infuriated Pasteur, for whom the process meant the intervention of a living cell. Bernard, on the other hand, was feeling his way towards the conception of purely chemical enzymes, a view now universally accepted. The fact that Bernard had hidden his notes away implied that ill-health had prevented his putting them into a complete form for publication. One can agree with Pasteur that Berthelot was inconsiderate in publishing them with so much *éclat*, in a way their author evidently did not intend. He had too much admiration for Pasteur to make anything resembling a crude attack. Evidently human frailty is consistent with scientific genius, for neither Berthelot nor Pasteur came out of the controversy very well.

We have endeavoured to express by a paraphrase of its contents the very real pleasure and enlightenment we have received from this book.

DISEASES OF THE DIGESTIVE TRACT

Clinical Gastroenterology. By Horace Wendell Soper, M.D., F.A.C.P. (Pp. 314; 212 figures. 25s. net.) London: Henry Kimpton. 1939.

The medical aspects of diseases of the digestive tract have had to be rewritten since the introduction of *x* rays and the more exact chemical methods of investigation, and whole chapters, such as those on dyspepsia and gastralgia, have had to be dropped from the textbooks. For a time the *x*-ray diagnosis almost took precedence, though there remained teachers who insisted that the patient's history might be a true guide to diagnosis, as in the case of duodenal ulcer or the pyloric syndrome. Recently there has been an increasing tendency for the physician again to take charge of the situation, and this tendency is reflected in the literature, in which the whole aspect of the disease is envisaged and discussed, radiology occupying a large but not predominant place. Such a textbook is that on clinical gastro-enterology by Dr. H. W. Soper. The author has been a consulting physician in this subject for a long time—long enough to have seen the development of the new teaching and to have formed his own conclusions. This textbook thus presents a useful statement of present-day knowledge, everywhere stamped by the results of the author's observations. Some of his opinions are controversial; this makes the book stimulating to read, but on the whole it is in conformity with modern views.

A short description of the author's own diagnostic methods in investigating his patients is followed by systematic chapters on diseases of the mouth, gullet, stomach, intestines, liver, and pancreas, so that the whole field is covered. These sections are short but satisfactory, and illustrated by well-reproduced and typical *x*-ray appearances, there being nearly two hundred radiographs. Interspersed are chapters on the broad aspects of dyspepsia, in which the author points out the considerable derangements of gastric function which may follow nervous and reflex irritation, and other symptoms such as constipation, diarrhoea, with an additional chapter on the use of the enema, indicanuria as an index of intestinal disorder (Dr. Soper finds indicanuria in practically all diseases as well as in some patients who are well; he regards it as a constitutional anomaly, inherited, but capable of control by general dietetic and hygienic treatment), and the use of the sigmoidoscope. His experiences of dairy milk have been unfortunate; he inveighs against the ordinary supplies as little better than bacterial soup, and in his practice uses exclusively for diets one or other of several forms of dried tinned milk. In a final chapter of therapeutic notes he combines the aphorisms of others with his own shrewd comment on the need for trying out carefully all measures and keeping an open mind about results until time has shown their lasting nature: the physician is not to ignore the underlying pathological state, but may do much by encouraging the nervous dyspeptic.

OPHTHALMIC SURGERY

Surgery of the Eye. By Meyer Wiener, M.D., and Bennett Y. Alvis, M.D. (Pp. 445; 396 illustrations. 37s. 6d. net.) Philadelphia and London: W. B. Saunders Company. 1939.

This book by Professors M. Wiener and B. Alvis breaks new ground in the English literature on the subject. Its distinctiveness lies in its shortness and in the profuse manner in which it has been illustrated: there are 396 illustrations to the 419 pages of text matter. The illustrations are particularly helpful and fully bear out the claim by the authors that drawings by a medical graduate have features that are apt to be missed by the professional artist. Dr. A. J. Hofsommer, who has been responsible for the finishing of the sketches made by the authors, is indeed entitled to some of the credit for this achievement. The text itself covers concisely the various ophthalmic procedures, and together with the illustrations leaves little to the imagination of the reader.

The book is well balanced, particularly in its earlier pages. The second half, devoted to plastic operations, tends to be rather encyclopaedic in the number of alternative procedures suggested—a fault, if it is a fault, that must be ascribed to the subject rather than to the authors. Any book on operative surgery, short of being exhaustive, must of necessity be somewhat personal, but the present volume shows personal idiosyncrasies in some important matters. Thus the authors dispense with taking a swab from the conjunctival sac before operating for cataract. They use eserine in the after-treatment of cataract extraction with peripheral iridectomy. They have the patient propped up in bed immediately after operation, and dressed and ambulatory the day after. They advocate irrigation of the anterior chamber after extraction but avoid putting a nozzle into the anterior chamber. They advise ripening operations for immature cataract and the leaving of a displaced trephine disk in the anterior chamber. In several sections guidance is by no means clear. The treatment for detachment of the retina consists to them essentially in the diathermy barrage method and the obsolete Guist method. The endless care that is necessary to localize the tear before operation and to check its sealing ophthalmoscopically during operation is hardly indicated in their description. It would, however, be ungracious to stress these and like defects in a book that on the whole serves as a safe guide for the beginner.

GOITRE AND IODINE METABOLISM

Schilddruese, Jod und Kropf. Klinische und experimentale Untersuchungen. By Max Saegesser. (Pp. 163; 20 figures. 10 Swiss frs.) Basle: Benno Schwake and Co. 1939.

This book on the thyroid, iodine, and goitre by Dr. Max Saegesser of Berne gives an account of three years' experimental work which the author has carried out for the purpose of elucidating the difficult problems that have been revealed in recent years by the careful examination of the relation between iodine supply and goitre. At one time goitre appeared to be simply a consequence of iodine deficiency, but the problem is now recognized to be more complex.

The author made a long series of experiments on the iodine metabolism of normal and thyroidectomized rats and showed that the power to retain iodine depended on thyroxine supply. He showed by a series of experiments on cretins that in this case also there was a deficient ability to store iodine. Measurements of the blood iodine of inhabitants of the endemic goitre regions showed a marked seasonal variation. This led to a study of the influence of ultra-violet irradiation and of vitamin D on the iodine metabolism of rats and human cases, and the author found that vitamin D lack caused a marked iodide deficiency in the tissues.

The final conclusion is that goitre is a disability caused by a series of factors of which iodine deficiency is important, but in which vitamin lack, and particularly vitamin D deficiency, plays an important part. The volume contains an account of a large amount of experimental work on animals and of biochemical human investigations, and the conclusions derived are of great interest.

Notes on Books

In the eighth edition and twentieth year of his *Early Diagnosis of the Acute Abdomen* Mr. ZACHARY COPE, believing that it would be unwise to carry out any serious alteration in the work, has added three more *x*-ray photographs and merely made a number of small verbal changes in the text. In this connexion, however, would not "appendical obstruction" (p. 53) be better as "appendicular obstruction," for the sake of euphony if nothing else? On page 73 "appendicular suppuration" reads smoothly enough. Not everyone will accept Mr. Cope's clinical description of a stage of prostration or primary shock in perforation of a gastric or duodenal ulcer. Perforation is often not accompanied by vomiting, and emphasis might be laid on board-like rigidity at the expense of all else. This rigidity by itself is an indication for laparotomy, and, as Mr. Cope graphically tells us, "misdiagnosis which leads to temporizing and delay is equivalent to a death sentence with a very slight chance of a reprieve." Further comment on this valuable and deservedly popular guide to diagnosis of abdominal emergencies is unnecessary. May there be many other equally successful editions in the future! The publishers are the Oxford University Press, and the price 10s. 6d.

The work entitled *The Hell of Ill-health*, by the late Dr. M. BIRCHER-BENNER, which has been translated from the German by Miss D. E. Hecht and Dr. E. F. Meyer, consists of three addresses which were delivered before the Food Education Society in October, 1937, and subsequently repeated in Zurich and Berne. In the first lecture the author discusses the physical and spiritual causes of ill-health, the former including dental disease, constipation, upset of intestinal balance, and disordered nutrition. In the second lecture, which is entitled "The Hell of Ill-health," examples of various diseases are given in which the author claims successful results by the combination of psychotherapy with dietetic treatment. In the third lecture, which is devoted to "the return to the realm of health," the author maintains that if every patient realizes the laws of ordered living and the true causes of his illness he will co-operate in his recovery. The work is published by John Miles, price 6s.

We have received a copy of the *Collected Papers from the Faculty of Medicine, Osaka Imperial University*, which have been published in 1938. They consist of thirty-one articles, chiefly on experimental medicine, of which twenty-two are in German, seven in English, and two in French, which have been published mainly in Japanese, German, or Russian journals. The subjects discussed include the vitamin C content of the cerebrospinal fluid, the passage of prontosil from the blood into the cerebrospinal fluid, the heat production of the pancreas, methylcholanthrene sarcoma cultured *in vitro*, chronaxis in surgery, the internal secretion of the pancreas, artificial hatching of *Ascaris* eggs, haemolysis in the light of morphology, experimental studies on the aetiology of variations in the nasal septum, and absorption of vitamin B_1 through the skin.

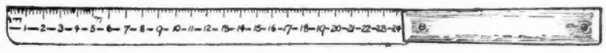
That a second edition of *Vade Mecum of Medical Treatment*, by Dr. W. GORDON SEARS, has been called for within a short time of its first appearance is good enough proof of its practical appeal. Revision has been undertaken and the therapeutic advances of the past two years skilfully incorporated. The publisher is Edward Arnold and the price 10s. 6d.

Preparations and Appliances

POST-MORTEM KNIFE

Dr. E. BIDDLE, pathologist to the East Suffolk and Ipswich Hospital, writes:

The recording of the dimensions of pathological abnormalities at post-mortem examinations by comparison with objects usually of an edible nature is generally admitted to be undesirable and inaccurate.



To obviate these disadvantages this knife has been designed. As will be seen from the illustration, the back is a centimetre rule, and as this knife is almost constantly in the operator's hands at post-mortem examinations no excuse could be made for not recording dimensions of tumours, etc.

The usual brain knife could be graduated, but it is an expensive procedure, and a cheaper method has been adopted by making the knife blade from a good steel rule.

The one illustrated was made by the local cutlers—Messrs. Smith and Daniels, Ipswich.

ALBUCID FOR GONORRHOEA

Albucid, or *p*-amino-benzene-sulphonacetamide, is a preparation which has found considerable favour in Germany in the treatment of gonorrhoea. The vendors (Schering Ltd., High Holborn, W.C.) claim that albucid is absorbed more rapidly than sulphanilamide and that inactivation by acetylation occurs more slowly with the former drug. With regard to these claims it must be noted that estimation of the relative merits of different compounds of the sulphonamide group is a difficult and controversial matter.

CALCIUM AND PHOSPHORUS TABLETS

Calfos brand tablets (Calfos Ltd., Imperial House, Kingsway, W.C.2) contain calcium phosphato-carbonate. Each tablet contains 1.7 grains of calcium. The manufacturers claim that the tablets provide calcium and phosphorus in a correct ratio and in an easily assimilable form.

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GASTROSCOPY

In 1932 Georg Wolf of Berlin, with the clinical co-operation of Rudolf Schindler, then of Munich and now of Chicago, constructed the first flexible gastroscope. The instrument was a triumph of mechanical ingenuity and made it possible for the first time to examine the interior of the stomach with comparative ease, complete safety, and little discomfort to the patient. The pioneer work of Schindler, Gutzeit, Henning, and others in Germany, and of François Moutier in Paris, was followed by a rapidly growing recognition in Great Britain of the value of gastroscopy, so that few large hospitals are now without a physician or surgeon who is more or less an expert in the use of the Wolf-Schindler instrument. Mr. Harold Rodgers, who translated Henning's small monograph on gastroscopy into English in 1937, has recently published with Mr. N. C. Tanner a report on the work of the gastroscopy clinic at Highgate Hospital. They rightly regard gastroscopy as an essential part of the investigation of many patients complaining of gastric symptoms. Cases are frequently seen in which it is as impossible to arrive at a correct diagnosis without gastroscopy as it would be to do so in an obscure bladder or lower intestinal case without cystoscopy or procto-sigmoidoscopy. Chronic gastric ulcers which are less than one-sixth of an inch in diameter, and larger ones which are unusually flat, are likely to be missed by *x*-ray examination. In six such cases recorded by Rodgers and Tanner ulcers which had not been found with *x*-ray methods were seen with the gastroscope. When all pain, tenderness, and rigidity have disappeared, occult blood is no longer present in the stools, and the radiograph shows no crater it is usually assumed that a gastric ulcer has healed. But the gastroscope shows that this is often not the case, and it is a wise practice to continue with strict medical treatment until direct inspection confirms that no trace of the ulcer is present. This should prevent the frequent relapses after treatment—relapses which are due not to the development of new ulcers but to the fact that the original ulcer has not completely healed. In view of the difficulty often experienced by pathologists in deciding by direct inspection of a freshly excised specimen whether a chronic ulcer is undergoing malignant degeneration, it is doubtful whether gastroscopy is of much greater value than the *x* rays in settling this question, which can be answered with certainty only by microscopical examination of the ulcer. Small primary growths of the stomach—perhaps more accurately called post-gastritic growths—can occasionally be recognized with the gastroscope when *x*-ray examination has shown no abnormality. Mr. Rodgers discovered eighteen such growths in a series of 1,000 gastroscopies. More often gastroscopy is of use in helping to arrive at a definite diagnosis in cases in which radiography has revealed suspicious but uncertain signs of carcinoma.

At one time surgeons ascribed to "nerves" or to "adhesions" the dyspepsia which often follows gastric operations when *x*-ray examination disclosed no sign of an anastomotic ulcer, as in many cases there was on exploration of the abdomen either no abnormality or nothing beyond adhesions. Being convinced that the symptoms, the chief of which were pain and haematemesis, either together or separately, must be organic in origin in spite of negative *x*-ray evidence, some physicians advised radical surgery in these cases, and severe inflammation, with or without superficial—or, less frequently, deep—ulceration, was found almost invariably, although no sign of active disease could be discovered on inspection or palpation of the exposed gastro-jejunal anastomosis. Gastroscopy has now confirmed these findings, and every case of post-operative dyspepsia should be examined with the gastroscope except in the comparatively few instances in which an undoubted ulcer is demonstrated radiographically. Here again the effect of prolonged medical treatment can be followed with the aid of the gastroscope, and the few cases in which healing does not occur and in which a second operation is clearly indicated can be recognized.

Chronic gastritis is now known to be a common disorder, though the symptoms to which it gives rise are very inconstant and it is often completely latent. It may give rise to haemorrhage owing to its association with minute erosions which heal very rapidly, this being the most common cause of the condition to which nearly forty years ago Sir William Hale-White gave the name gastrostaxis. Haemorrhage may also arise from subacute ulcers which are too superficial and too small to be recognized radiographically. The latter condition has been described in detail by Rodgers and Avery Jones,[1] who found that it is generally associated with achlorhydria, from which, however, recovery can take place even when it is histamine-refractory.[2] Rodgers and Tanner also describe a form of gastritis which they regard as pre-cancerous and corresponding with that which Hurst believes is the cause of the achlorhydria occurring in 60 per cent. of cases of cancer of the stomach; the minute anatomical features have been accurately described by Konjetzny as a result of his examination of numerous fresh specimens removed at operation.

All who are concerned with these and other problems of gastric pathology will read with interest Dr. Rudolph Schindler's paper in our current issue (p. 243). So convinced is he of the value of gastroscopy in the diagnosis of gastric disorder that he thinks a special hospital unit should be formed into which cases of disabling dyspepsia in soldiers should be admitted. Although it is a remarkable fact that indifferent food and prolonged nervous strain led to no obvious increase in the incidence of gastric disorders, either functional or organic, among soldiers during the last war, it would seem desirable that each large hospital centre should

[1] *St. Bart's Hosp. Rep.*, 1938, **71**, 141.
[2] Hurst, A. F., and Lintott, G. A. M *Guy's Hosp. Rep.*, 1939, **89**, 173.

make use of the services of any available gastroscopists for investigating gastric cases, just as cystoscopy would certainly be used for patients with disorders of the bladder. It is interesting, too, to recall that sigmoidoscopic examinations of British soldiers suffering from dysentery carried out in Lemnos and Salonika made it possible for the first time to study the characteristic lesions during life, and to observe how easy it is to differentiate between amoebic and bacillary dysentery by direct inspection of the mucous membrane of the bowel.

VALUE OF RESEARCH ON TWINS

More than fifty years ago Francis Galton perceived, with the vision of genius, the immense scientific value of human twins, especially in the elucidation of the parts played by Nature and nurture in human development, normal and abnormal. Since that time numerous studies of twins have been carried out, and scarcely a month passes now without the recording in the medical journals of the world of cases in which identical twins show startling similarities in medical history, or in which it is clear that an underlying genetic potentiality is expressed differently in different circumstances, or that variations in environment can lead to changes commonly thought to be hereditarily determined. From a practical point of view studies of twins are of two broadly contrasted types. Comprehensive research schemes on large numbers of twins may be undertaken with reference to physical characteristics, to mental differences, and to the causation of relatively common diseases, such as tuberculosis, cancer, schizophrenia. In such instances it is known or suspected that heredity and environment both have a hand in producing the final result, and a comparison of the resemblances between identical pairs and fraternal pairs respectively is of much value in deciding the extent and the kind of the contribution of both sorts of influence. Perhaps the largest body of data on twins yet published is that contained in the book by Newman, Freeman, and Holzinger,[1] which provides full records of physical and mental measurements of large groups of identical and fraternal twins, and also a detailed account of nineteen pairs of identical twins brought up apart. This volume illustrates very well the difficulties, as well as the usefulness, of biometrical observations on twins. There is no easy answer to the Nature–nurture question, and although valuable information may be forthcoming there are difficult problems of statistical technique and of interpretation to be faced.

Investigations of the kind briefly described require large numbers and are ambitious research projects; they must be left to the specialist. There is, however, another way of studying twins—that is, the observation of the single case. Here the two twins of a pair are presumed to be identical. Sometimes they show a remarkable similarity in respect to some disease process—its nature, its origin, its progress, its special features, and the like. Or it may be that the differences are no less instructive than the similarities, demonstrating that, although a condition may be hereditarily determined, non-genetic influences have produced variations of manifestation. There are yet other instances in which identical twins differ entirely, one, for example, being diseased and the other remaining healthy. These are the types of observation which can be made by any medical man fortunate enough to encounter an interesting case. Papers describing the most minute resemblances in respect of some abnormality or disease are numerous; a single example may be given here. Neel[2] has described recently two pairs of identical twins suffering from nodular goitre. In both cases there was the closest similarity in history, general appearance, and in the macroscopic and microscopical findings. An instructive instance of the value of detailed study of a single pair of twins occurs in Kallman's *Genetics of Schizophrenia*.[3] Kaete and Lisa, the offspring of a schizophrenic mother and an unknown father, were adopted soon after birth by two separate maternal uncles. The uncles were on bad terms and the twins hardly ever met during their first ten years of life. Although later they met rather more frequently, they never formed the emotional bond characteristic of identical twins. Four months before her sixteenth birthday Kaete, who had been employed at a factory, gave birth to an illegitimate child. Delivery was uneventful, but a few days later she began to show signs of anxiety, perturbation, and excitement, and quickly lapsed into a profound catatonic stupor. After a year at a mental hospital there was a brief improvement, followed by relapse. She exhibited in rapid succession states of silly indifference, anxiety, stuporous negativism, and wild agitation and excitement. So great was the deterioration in personality that at the age of 22 it was clear that prolonged, if not permanent, hospitalization would be necessary. The outward circumstances of Lisa were very different. As a domestic servant she lived in the well-protected shelter of a private family. A year and a half after the onset of her sister's psychosis she began to show a slowly increasing helplessness and emotional indifference, which passed gradually into a catatonic state. At the age of 22, a patient at the same hospital as her sister, her mental deterioration was not nearly so advanced as that of Kaete. It would be difficult to find a better example of an identical hereditary constitution determining the same mental disease, and at the same time of the effect of environment upon the time of onset and the intensity of the psychotic process. Another illustration of how twin studies may throw light on problems of the causation of disease is provided by recent work on the relation of epilepsy to cerebral dysrhythmia, as revealed by electro-encephalography. Lennox, Gibbs, and Gibbs[4] and Löwenbach[5] have shown that many of the apparently normal relatives of epileptics exhibit the same abnormal waves as the epileptics themselves. The underlying dysrhythmia is strongly, perhaps simply, inherited; but it is in a small proportion of cases only, probably about 5 per cent., that actual

[1] *Twins*. University of Chicago Press, Chicago. 1937.

[2] *Surgery*, 1939, **5**, 582.

[3] New York, J. J. Augustin, 1938, p. 207.

[4] *J. Amer. Med. Ass.*, 1939, **113**, 1002.

[5] *Johns Hopk. Hosp. Bull.*, 1939, **65**, 125.

fits occur. Löwenbach describes 12-year-old identical twins of which both showed the dysrhythmia but only one was an epileptic. The importance of such studies needs no emphasis.

There can be no doubt that many valuable pairs of twins exist in our population and that the medical man who investigates any of them may make an important contribution to medical research. Systematic investigation of larger numbers, and particularly the comparison with fraternal pairs, may well, in many instances, await the preliminary clarification effected by such isolated studies. There is, however, one extremely important proviso: the nature of the twinning, whether identical or fraternal, must be established beyond reasonable doubt. This is by no means always easy. Sometimes, as in the paper by Neel mentioned above, the similarity in the disease process itself, added to photographs alone, leaves no reasonable doubt that the twins are identical. But in all those important cases in which it is the differences that are principally of interest the diagnosis of the type of twinning cannot be settled so easily. Some fraternal twins may resemble each other closely, just as may brothers or sisters born at different times; on the other hand, there may be quite noteworthy differences between twins who are certainly identical, as, for example, in some Siamese pairs. A growing realization of the value of investigating individual twins, in addition to the more obvious cases of striking similarity, will undoubtedly bring to the forefront the difficulty of diagnosing the type of twinning. It is true that there are usually ways of settling the diagnosis, but even after expert application of all available methods it is probable that a small proportion of pairs will defy reasonably certain classification. This circumstance, together with the highly technical nature of some of the diagnostic procedures, will, unless the difficulty is met, seriously limit individual studies of twins: either the published account will leave a doubt as to the nature of the twinning or, even more commonly, the medical man will be deterred from publishing the case at all. Is it possible to devise a scheme which would meet the difficulty? We believe that it is. The more difficult measurements do not necessarily involve actual contact with the patient. Finger prints and palm and sole prints are among the foremost requirements; they need expert interpretation, but any medical man could take them after brief (written) instruction. Blood grouping should be carried out, and M and N, as well as the subdivision of A, should be utilized; the medical man can easily obtain the blood samples. Locks of hair removed from a predetermined area of the head can be sent for comparison. Radiographs of the wrists, elbows, ankles, and knees—in children—must also be interpreted by experts. Such observations, together with a few simple physical measurements—stature, for example—would settle the diagnosis in most cases, while those pairs which must at present be regarded as indeterminate would be distinguished as such. If some authoritative body were to lay down the procedure, issue instructions for those obtaining the measurements and specimens, and undertake to furnish a report on the material received, there should be a notable increase in the number and value of medical studies of twins. The Galton Laboratory of the University of London occurs to us as the type of institution which is well equipped to undertake this task; furthermore, it would be peculiarly fitting if the laboratory which Galton founded could perform such a service to medical science in the field which he himself was the first to explore.

HORMONE TREATMENT OF PROSTATIC HYPERTROPHY

A review of the literature on the hormonal control of the prostate and its relation to clinical hypertrophy of the gland—such as that recently published by Vidgoff[1]—is not very encouraging. The effect of androgens, oestrogens, and gonadotrophins on the gland in adult animals is still in dispute. One result of this is the adoption of various methods of treatment in senile hypertrophy of the gland in man. Although each method can be supported by certain experimental facts, there can be no logical basis for any one treatment until all the facts are integrated into a comprehensive whole. For example, because injection of testicular extracts led to hypertrophy of the gland, castration was favoured forty years ago; because oestrone produces hypertrophy of the gland and some workers find diminished androgen excretion in cases of prostatic hypertrophy, injections of testosterone have been given; because of the claim that testicular extracts (which, as they are active orally, cannot be testosterone or androsterone) decrease the weight of the gland, dried testes have been administered by mouth. At least one worker has suggested that the complaint is due to oestrogen deficiency, and has consequently treated the condition with massive doses of oestrone. Each of these methods has had its enthusiastic supporters and its large numbers of usually uncontrolled cases. Clinical enthusiasm sometimes outruns scientific caution. It is not proposed to assess here the relative value of the various treatments, but rather to suggest some possible explanation of the discrepancy of results found in the literature. This must have its origin in the complexity of the sex-endocrine relations at work and the factors which are inadequately controlled for that reason. Some of these factors may be stated, others only guessed. First we may mention the complex structure of the gland itself, its various lobes being of embryologically different origin, and their anatomical relations and origin varying from species to species. Secondly, the work on adult animals is necessarily complicated by the presence of the animal's own testes and pituitary; both oestrogens and androgens depress hypophyseal function. Thirdly, if questions of androgen and oestrogen excretion are to be adduced as evidence the probable origin of the androgens in the adrenals will have to be considered. It is obvious, however, that the disabling and prevalent nature of senile prostatic hypertrophy, with its attendant surgical risks, will encourage the use of any treatment with pretension to experimental backing. It is also clear that the most likely animal to yield results applicable to man is the monkey, and with this end in view Zuckerman, with Parkes and other collaborators, has during the past few years made an extensive study of the effects of sex hormones on the prostate of immature monkeys. Their main conclusions are that, although both oestrone and testosterone will increase the size of

[1] *J. Urol.*, 1939, **42**, 359.

the prostate, they act on different parts of the gland. These differences have been examined quantitatively by Zuckerman and Sandys,[2] who find that oestrone increases the relative proportion of the fibro-muscular middle lobe or utricular lobe, while androgens increase the proportionate size of the glandular zones. The effects of oestrone can be inhibited by simultaneous injections of progesterone or of testosterone. In the *Hanuman langur* they find that oestrone produces a hyperplasia and glandular development of the prostatic ducts which is very similar to the histological description given by Deming and Neumann[3] of the pathology in human benign hypertrophy. These findings therefore support the view that the human complaint is due to the diminished secretion of androgen in senility with consequent uncompensated oestrogenic stimulation. The treatment of prostatic hypertrophy with androgen injections has therefore a rational basis. Only clinical experience can decide whether the results obtained in the immature monkey are applicable to ageing man.

BRAIN METABOLISM

Chute and Smyth[4] have devised a method of studying the metabolism of the cat's brain by isolating it under chloralose anaesthesia and then maintaining it in a state of normal activity by artificial perfusion. Isolation of other and less complex organs from the body has simplified the study of their function and has removed at one step all the uncontrollable variables which are present with the organ *in situ*. The vascular connexions of the cranium and the structure of the central nervous system make perfusion of the brain especially difficult, and, moreover, it has not a simple function such as secretion or movement on which observations can be made during perfusion experiments. One of the pioneers in this field has recently been awarded the Nobel Prize, but Heymans in his experiments has not been directly interested in cerebral metabolism. Chute and Smyth have perfused the brain with defibrinated blood by connecting the carotids and jugulars to an ingenious perfusion apparatus. By sealing off the spinal canal and the small basal vessels with a firm clamp a closed circulation is maintained through the cranium and its contents. As the eyes and upper face are included in their preparation reflex movements of the lids and pupils show the viability of the brain. The pupillary light reflex has persisted for five hours after complete isolation of the cranium, and noise or touch brings about movements of the lids. Electrical and chemical stimulation of the cortex produces appropriate movements, and so long as such responses can be obtained experimental alteration of the perfusing system presumably causes cerebral changes similar to those found in the intact animal. Blood flow, oxygen usage, and carbohydrate metabolism have been investigated. The blood requirement is similar to that found by indirect measurement, but the oxygen consumption is lower than that found by other workers *in vivo*. It is much higher, and also more constant and reliable, than that obtained from experiments *in vitro*. A relationship between the blood-glucose level and the oxygen and glucose consumption could be seen, and the figures obtained suggest the possibility of other substances than glucose being utilized. There is evidence that, although there is a predilection to use glucose, lactate may also be burned by nervous tissue.

[2] *J. Anat.*, 1939, **73**, 597.
[3] *Surg. Gynec. Obstet.*, 1939, **63**, 155.
[4] *Quart. J. exp. Physiol.*, 1939, **29**, 379.

HASTENING WOUND HEALING

In order to maintain the growth of a tissue culture for any considerable period the medium must contain a growth-promoting substance which is absent from ordinary body fluids. Its usual source is a ten-day chick embryo, which is minced in a saline solution and centrifuged out after standing, the supernatant fluid then furnishing the necessary extract. It was to be expected, and indeed has been known for years, that the unknown factor in such extracts would also stimulate the growth of cells to which it was directly applied when they formed part of the whole living body. That this knowledge has not been applied in surgical practice is due only to the technical difficulties of preparing such extracts, and the instability of the active constituent has been the most serious obstacle. Under the direction of Fischer of Copenhagen, one of the foremost exponents in Europe of tissue-culture technique, these difficulties appear to have been overcome, and the growth-promoting substance is now available in the form of a powder, in which it is adsorbed on to kaolin. Experiments in animals have shown that the application of this powder accelerates wound healing, and clinical confirmation is to be found in the observations of Mr. W. Grant Waugh, whose paper is printed at page 249. He was fortunate in receiving a supply of this substance, to be known as "epicutan," from Denmark, and successful, owing to his choice of suitable cases and his accurate methods of observing the effect, in proving that the healing of wounds was accelerated by it. These observations incidentally illustrate the value of applying mathematical methods to biological problems which at first sight seem to elude such treatment. Painstaking measurements and analysis of their meaning have revealed laws which govern the rate of healing of wounds, and the application of this method and knowledge has here produced data of admirable precision. There is plenty of room for much more quantitative observation in the clinical field, and this is an example of how it can be done. Of the action of this product we shall doubtless hear more in time, and thus become able to form an opinion on the extent of its usefulness. It would be interesting, for instance, to know whether it acts equally on all types of cell. Presumably fibroblasts respond to it; is there therefore any danger of a too extensive formation of scar tissue? There is clearly a vigorous action on epithelium, and the extent to which this can replace skin-grafting will form an interesting subject of study.

THE FORGOTTEN SWAB

In a recent discussion in the Danish Medical Society in Copenhagen on the liability of doctors to pay their patients compensation for faulty treatment one of the principal speakers was a surgeon, Dr. Mogens Fenger, who gave some personal reminiscences on the forgotten swab. In the course of some 8,000 to 9,000 operations in ten years he had lost and found swabs under conditions which had taught him to be lenient to fellow victims. On two occasions, on the completion of an operation, he was informed by the sister in charge that a swab was missing. In both cases search was made in vain and the wound was closed. In one of these cases an operation had been performed on a woman whose gall-bladder appeared to be involved in a malignant growth which could not be removed. About a year later she returned with a fistula whose opening disgorged the missing swab. In the other case the patient suffered from an enormous pyonephrosis.

Early in the operation an opening made in the peritoneum was promptly closed, but only after swabs had been employed. When the operation was to be completed a swab was missed. The peritoneum was opened again in search of it, but it could not be found. The patient died, and at the post-mortem examination the swab was found behind the peritoneum, to the left of the middle line, whereas the pyonephrosis had been on the right side. In a third case, that of a woman aged 40, operated on for a large fibroma of the uterus, the swabs were counted before and after the operation and the numbers tallied. About six months later the patient returned with a swelling at the level of the umbilicus, suffering from fever and pain. An incision yielded a swab whose removal was followed by recovery. Meanwhile the patient had been obliged to close her little shop for half a year. Was she to be told? Dr. Fenger consulted a lawyer, who counselled honesty as the best policy. When told the truth the patient was overjoyed, for she had suspected malignant disease as the indication for the second operation. She assessed her economic loss at kr. 600, which were paid by an insurance company, delighted to get off so cheaply. After referring to yet other cases in his personal experience, Dr. Fenger challenged the opinion, common with doctors as well as with the public, that this accident always justifies a verdict of negligence against the surgeon. He also referred to the investigation set on foot in Germany by Guleke, who sounded ninety university surgical hospitals on the subject and obtained answers from sixty. Only five of these sixty protested their complete innocence ("völlige Fehlerfreiheit"), but as it happened Guleke knew that one at least of these five did not have a blameless record in this respect. He concluded that this accident may be anticipated once in every 2,000 to 5,000 operations. Dr. Fenger's dry comment on this calculation is that in Denmark alone over 100,000 operations are performed annually. A simple essay in arithmetic, and one can calculate to a nicety how many Danes acquire forgotten swabs in any given year.

SOCIAL OPHTHALMOLOGY

The first number of the third volume of the *Journal of Social Ophthalmology* well maintains the high standard of previous issues; and again the publication is issued in both French and English.[1] The first paper is by the president of the International Association for the Prevention of Blindness, Dr. P. Bailliart. He gives an outline of a programme for the prevention of blindness, both in civil life and in war. He deals with the action of ophthalmologists, of general practitioners, and of public authorities. A paragraph in the section regarding the work of general practitioners is well worthy of quotation. He writes: "While, even in countries where there are many ophthalmologists, it is often the general practitioner who is first consulted by the patient with a diseased eye or a failing eyesight, there are still countries where, owing to the absence of specialists, the patients have to apply to the general practitioner. In most cases, owing to the common sense of these physicians, catastrophes are avoided, yet they should have a minimum acquaintance with ophthalmological facts, with our recent discoveries; they should know, for instance, that to-day detachment of the retina is curable, that glaucoma is a treacherous and insidious disease, that some brain tumours which may be benign affect first slowly the eye and may be curable; that an examination of the fundus is in many cases the best guide to medical diagnosis. They should know that certain eye drops, certain lotions which a clever publicity showers on them are undoubtedly harmless, but that much precious time is lost when they are used in certain eye diseases." Among the other contents there is an interesting article on ophthalmia neonatorum in the Near East by Dr. E. Delanoe. She confirms the rarity of the disease in these regions and gives some explanation of this.

[1] *Journal of Social Ophthalmology*, 66, Boulevard Saint-Michel, Paris.

"THE BIRTH OF A BABY"

The sponsors of this film, presented by the National Baby Welfare Council, emphasize that it can in no way be regarded as entertainment, but that it opens up a new and powerful medium for adult education. The main theme is the ante-natal care and confinement at home of an American primipara. Her mother-in-law and her immensely impressive doctor seize opportunities, in response to questions, to deliver short lectures, well illustrated, on reproductive physiology and the dangers which beset the parturient. The drama reaches climax in a quiet and easy delivery under anaesthesia. The best "shot" of the picture is a "close-up" of the baby immediately after delivery lying inert and motionless except for the pulsations of its cord, till suddenly and amazingly it screams its expostulation. This is entertainment pure and simple, and always will be. A well-delivered commentary at the beginning of the picture warns us of differences between American and English obstetric technique, but it was surprising to find complete omission of any hint that the placenta remained to be delivered after the baby. Parallel with the main story, the daily life of the doctor is used to illustrate incidents of obstetric interest—the case of pre-eclampsia, the rich lady seeking to escape maternity, and the inconsiderate husband. The whole setting of the film is opulent and perhaps will convey an impression of unreality to the majority of mothers in this country. The acting and the accent are best American. In spite of this the educative value of the film is high. Some who attend this film may expect indecency, and the manifold and unnecessary restrictions of the licensing authorities may encourage visitations from the prurient, but there is nothing here that would shock even a congregation of churchwardens.

We regret to announce the death of Sir William Hodgson, late chairman of the Cheshire County Council and for six years a member of the Insurance Acts Committee of the British Medical Association; also of Dr. H. Campbell Thomson, consulting physician to the department for nervous diseases and emeritus lecturer in neurology, Middlesex Hospital, and formerly dean of the medical school.

Sir Farquhar Buzzard, regius professor of medicine in the University of Oxford, is one of the twelve trustees appointed by Lord Nuffield to be responsible for the administration of his trust for the provincial hospitals. (See *Journal*, December 9, 1939, p. 1148.)

Dr. A. J. Orenstein, formerly chief of the Mosquito Control Board and joint author of *Mosquito Control in Panama*, has been reappointed Director-General of the Union of South Africa defence medical services.

MEDICAL PROBLEMS IN WAR

This is the second of three articles surveying the literature of neuroses in war

NEUROSES IN WAR

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Psychopathology

Three schools of thought can be discerned among the numerous aetiological views advanced in the literature of the last war. They attributed war neuroses to (1) anatomical lesions of the nervous system; (2) inborn biological and psychological inferiority—the psychopathic constitution; and (3) psychological reactions to war experiences in individuals previously sensitized to emotional disturbances subjectively similar although objectively different in their nature.

Early writers on the subject noted the purposive nature of many of the neurotic symptoms of soldiers but failed to differentiate between conscious, preconscious, and unconscious aims. No distinction was made between malingering and hysteria, and the patients were treated accordingly. Authors of that period stressed the desire for removal from the front line and the wish for material compensation as ulterior motives of neurotic manifestations. The absence of neurosis in severely wounded and war prisoners was noted, and was interpreted in the sense that in both cases a "flight into illness" was no longer needed, as the aim of removal from acute danger was already attained. Terms like "neuroses of covetousness" and "defence and protection neuroses" were coined. To other observers the desire for gain was of minor aetiological importance, but came into action once the neurosis was established. In their view the neurosis itself originated in an incompletely recognized conflict between sense of duty, patriotism, and military discipline on the one hand, and the wish to escape from painful experiences on the other. With regard to the initiating terrifying experience, it was suggested that during the transitory disturbance of consciousness often preceding the onset of the neurotic dissociation phenomena a splitting off of the affect from ideational content took place, resulting in fixation of psychoneurotic symptoms (Bonhöffer). In military neuroses the display of helplessness, the need for care, and in some gross cases childish behaviour and speech were taken as signs of a reactivation of defence mechanisms of infantile pattern (Gaupp and Schmidt). These findings recorded by psychiatrists tally with those of psychoanalysts (Jones, Abraham, Eder, Ferenczi, Simmel) and authors with allied views (Crichton-Miller, Hadfield, Nicole). They acknowledge the volitional nature of symptoms in both civilian and military neurosis, but separate such almost conscious motives as removal from danger and craving for sympathy from those which are completely unrecognized. The precipitating event, whatever its nature, and the current conflict over showing fear revive deeply buried archaic conflicts and lead to a regression to infantile patterns of behaviour. Deep conflicts over unrecognized sadistic impulses are often given as examples. A bayonet attack or the sight of a mangled body of a comrade will arouse horror in anyone, but will provoke a disproportionate reaction in individuals in whom there are pre-existent unrecognized conflicts over violence and aggressiveness. During peace time many such individuals were able by sublimation, reaction formation, or environmental manipulation to avoid situations likely to provoke their own aggressive impulses. During war, on the other hand, not only was the general taboo on violence diminished but they were forced by military service into situations which would inevitably have stimulated their aggressiveness and have provoked anxiety. This anxiety is a signal of a threatened breakdown of defences against aggressive impulses. If further stimulation of aggressive impulses took place a complete breakdown ensued.

Psycho-analytic writers describe in neuroses of war a basic personality structure characterized by self-centredness, over-conscientiousness, lack of sociability, and lack of affection for relatives and friends. Such individuals suffer from a feeling that their personality has been neglected and that their importance is not sufficiently recognized. Many of these men were unable to carry out their tasks in practical life; others, capable of doing this, showed little initiative or energy (Abraham). This group often revealed an effeminate disposition, were dependent on their wives, and frequently were weakly potent. Life in the trenches exposed them to a danger of death, which constituted a threat to their excessive self-love. Community life ran counter to their asocial tendencies, and the unconditional demand for self-sacrifice in war called for a renunciation of narcissistic privileges. More so than others, individuals of this type were prone to conflicts about aggressiveness, and through their latent homosexual tendencies the exclusive association with men constituted a special stress. Under such stresses these individuals increasingly regressed to a narcissistic level of development, leading to a state of infantile helplessness, with a complete surrender to their suffering and a need to be pampered, cared for, and petted like children. The withdrawal of object libido (diminished capacity for external interests and emotional ties) results in an inflation of ego libido (self-centredness), which is expressed in abnormal hypochondriacal sensations and a further diminution of genital potency.

Symptomatology

To say that the psychological structure of the war neuroses does not differ from that of traumatic neuroses in peace time implies that, despite the specific colouring given by the special circumstances of onset, there is no fundamental difference in the symptomatology of these neuroses. A description of such syndromes as simple terror, anxiety states, conversion hysteria, including stupor states and obsessional states, is given elsewhere. A few points of special interest emerge from a study of the literature.

Variability of Symptoms

A review of the literature shows a remarkable variation in the nature and incidence of the neuroses. This may be due to the personalities of the observers, the places of observation, and the variability of the material. Guided by their peace-time training and their field of interest

many observers reported syndromes which, as in the case of Babinski's "reflex disorders," were rarely seen by others.

Psychiatric casualties seen at a casualty clearing station differed from those at base hospitals. Minor casualties such as terror states never reached the base hospital. Gross hysterical disorders often developed after transfer behind the firing line (Roussy and L'Hermitte, Mott, Schneider). Psychosomatic disorders such as effort syndrome, dyspepsia, and "rheumatism" were often misdiagnosed. They were frequently admitted to medical or other wards, and came late, if ever, under the observation of psychiatrists. "More neuroses lay in the medical wards than in the psychiatric hospitals" (Culpin).

Fallacies arose from a study of selected groups. Officers are said to be more often affected than men and in a different way (H. Head). Of the admissions to a British casualty clearing station over a period of thirteen months there was one officer patient to every fourteen patients of other ranks, whereas the actual proportion of officers to other ranks in combatant formations was about 1 in 30. According to the official American history "neurasthenia" was five times as common in officers as in men, and had also a less favourable prognosis as regards return to the front, since only 25 per cent. of the officers returned to duty, compared with 61 per cent. of the men. Less than a quarter of British officer patients gave a history of being buried or blown over by shells, in contrast to one-half of the other ranks. Conversion hysteria was almost entirely confined to privates and N.C.O.s, and occurred, for example, only five times in 353 officers with psychological disorders. On the other hand, the vast majority of patients with anxiety states were officers.

The severely wounded hardly ever displayed neurotic manifestations, which often develop after physical health has been restored. According to some authors psychoneuroses are extremely rare among war prisoners (Claude, Mörchen, Wilmanns, His), whereas others, admitting the difference from symptoms seen in combatant soldiers, describe a specific syndrome occurring in those conditions. Bonhöffer, Vischer, and others described how the confinement and monotony of life in prison camps, accentuated by sexual deprivation and lack of privacy, led to "barbed-wire disease." The main symptoms were increased irritability, intense difficulty in concentration, and restlessness. Failure of memory was frequent, and many showed the depression to which the French authors gave the name "cafard."

Prodromal Signs

Neurotic symptoms in war time sometimes appear quite suddenly, but there are usually prodromal signs. The most common of these are (1) fatigue, (2) increased indulgence in alcohol or tobacco, (3) a tendency to become unsociable or irritable, (4) a loss of interest and disinclination for effort, and (5) emotional crises—for example, crying fits or states of anxiety and terror. Character changes were found. "The bellicose individual becomes moody, the solemn sullen talkative, the care-free reckless, and the well-behaved takes to petty crime" (Tyrrell). Soldiers in the prodromal state often display a hypersensitivity to acoustic stimuli, and tachycardia, increased sweating, and slight cyanosis of the extremities were found. If soldiers with such symptoms remained in the firing line a fully fledged psychoneurosis ensued.

As described below, differences in the nature of the prodromal symptoms were held to exist, corresponding to the later psychological disorders (MacCurdy).

Anxiety States.—The first sign was a feeling of fatigue, abnormal in its capricious nature and therefore interpreted as a form of anxiety. There was also a feeling of weariness and tenseness, with a restless desire for action or distraction, often accompanied by irritabiltiy and difficulty in concentration and a tendency to start at any sudden sound. Although, in contrast to ordinary fatigue, the feeling of weariness usually improved towards night, there was great difficulty in getting to sleep and a long period of hypnagogic hallucinations in which the main events of the day appeared in troublesome visions. When it did come sleep was frequently interrupted by battle dreams. When this situation had progressed for some time the soldier developed fear and horror of the sights around him and was unable to keep his mind away from the possibility of injury. Previously acquired judgment concerning the direction of shells was lost and consequently every shell seemed aimed at him personally. By this time there began the second prodromol phase, characterized by the fear of failure to conceal anxiety which is known to be there. Three practical avenues of escape are then considered: the soldier may receive an incapacitating wound, he may be taken prisoner, or he may be killed. Torn between fear and the fear of showing fear, neurotic officers in particular often display great courage and on the whole received more decorations than non-neurotic ones (Schneider). A stuporous state may occasionally usher in a neurosis. Traumatic loss of consciousness is followed by a period of confusion and delirium during which consciousness is regained for short intervals. On the other hand, the prodromal "functional stuporous state" is one of acute terror, with dilated pupils, a cold sweat, violent trembling, shallow breathing, and inability to perform any voluntary movement. It is succeeded by a period of confusion and amnesia, during which voluntary movement is possible. Myers suggests that the "unconsciousness" which figured so frequently in the histories of many patients may be identical with this stuporous state.

Conversion Hysteria.—Although in conversion hysteria, as in anxiety states, fatigue was the initial symptom, it was nearly always less severe. Sleeplessness was infrequent and nightmares were rare; more common was a history of open grousing and resentment of the need to fight. "Jumpiness" was less pronounced and there was a relative absence of the conscious mental conflicts between duty and ideals which took such a prominent part in the prodromal anxiety state in officers. In the history of practically every hysterical case examined by MacCurdy there was elicited the hope that they would be incapacitated from active service by being wounded. In consequence such an event as concussion provided the occasion for the development of definite symptoms. Alternatively, as with anxiety cases, the infliction of an actual wound did not precipitate hysterical symptoms, and these developed later during convalescence after a "période de méditation" (Charcot, Roussy, L'Hermitte, Wm. Brown).

Psychosomatic Disorders

The mechanistic bias of the time accounted for the incomplete understanding and recognition of psychosomatic disorders during the last war. The most comprehensive study of this field was made by Culpin, who contrasts what he calls somatic hysteria, combined or alternating with anxiety states, and somatic manifestations in psychasthenia. In conversion hysteria the patient dissociates himself completely from his symptoms, whereas

in obsessional states he realizes the morbid nature of such symptoms as tremors, stammers, and tics, but is unable to control them. A few psychosomatic disorders are chosen for discussion.

Effort Syndrome

First mentioned by Harthorne and Da Costa in the American Civil War, a condition was often seen during the last war characterized by a type of cardiac symptom without any structural lesion. Terms mentioning the heart (soldier's heart, irritable heart, D.A.H.) proved obviously dangerous, and it is now agreed that they should be replaced, as Sir Thomas Lewis suggested, by the safer and more accurate label of "effort syndrome." The significance of the disorder will be realized if its frequency and incapacitating effects are considered. No absolute figures of the incidence of psychoneuroses in general and of effort syndrome in particular are available, but in 1,043,653 British casualties admitted to medical units from 1916 to 1921 there were 13,408 cases of functional disease of the heart, compared with 21,549 cases of functional disease of the nervous system—that is, two of functional heart disease to every three of functional nervous disorder. Among 32,983 patients with functional nervous disease admitted to American hospitals from April, 1917, to May, 1919, only 4,376 cases of "neurocirculatory asthenia" were found, the difference being possibly due to the selection of recruits and the shorter period of active service. According to British and German observations (Lewis, Hofmann, Jacob) only one patient in every ten admitted to cardiac hospitals suffered from organic heart disease.

The main feature of effort syndrome is an abnormal physiological reaction to effort—breathlessness, especially on exertion, fatigue or exhaustion on exercise, precordial or other pain, giddiness, blurred vision, vasomotor abnormalities, and fainting. The exercise tolerance test shows an undue increase in pulse rate and a delayed return to normal. The blood pressure is said to show no significant variation. About one-half of the cases began in civil life, under conditions where physical strain was unimportant (Lewis, Parkinson), and a further 12 per cent. during the period of training (Lewis).

The aetiology of the condition has been widely debated. It has been attributed to heart "strain," infection, tobacco, alcohol, hyperthyroidism, gas poisoning, and shell shock. According to Hurst "soldier's heart" is only one manifestation of the nervous exhaustion or neurasthenia which results from the combined effects of physical fatigue, mental exhaustion, and toxaemia; the toxaemia most frequently being of exogenous origin (bacteria or tobacco) and rarely of endogenous origin (endocrine secretions). Lewis dismisses heart strain, excessive indulgence in alcohol or tobacco, gas poisoning, and hyperthyroidism as important aetiological factors, pointing out, for example, that heavy smokers showed a better prognosis. In 80 per cent. of his cases infectious diseases had preceded the onset of the disorder, although it was only in 30 per cent. that they immediately preceded the onset of symptoms. He stresses the frequency of the disorder in soldiers who previously followed sedentary occupations and in sensitive, querulous, highly strung, or depressed individuals. His group of cases included an abnormally high number of teetotallers, and 15 per cent. had morning spermatorrhoea. In his view there was no uniformity of aetiology, and constitutional weakness or retarded development, exposure, and infection played varying parts. Similar views were expressed by A. Abrahams. The psychiatric effect of effort syndrome was investigated in more detail by Oppenheimer and Rothschild, Cohn, MacCurdy, Culpin. The frequency of a positive family history or of factors predisposing to psychoneurosis was stressed (Oppenheimer and Rothschild). Cohn and Culpin independently emphasized the psychological implications of certain features often found in effort syndrome patients, such as tremor of hands, ready sweating, disturbed sleep, shakiness on slight excitement, ready "starting," and a feeling of depression. "There is no break in the series joining these and others in which a typical anxiety coexists with a rapid pulse, shortness of breath, precordial pain, and occasional faintness and giddiness. In short, with regard to many patients it is clinically a matter of indifference whether they should be placed under one heading or another." "Disordered action of the heart is most often a neurosis" (Culpin).

Inconsistent views were held with regard to amenability to treatment; according to most authors cases of effort syndrome are highly resistant to any form of treatment (Abrahams and Parkinson). Men of feeble physique with symptoms in civil life are unlikely to improve sufficiently to make good soldiers; with this exception the prognosis is good (Hurst). Out of 558 cases seen by Sir Thomas Lewis approximately 50 per cent. were judged to be unfit for any category of duty: of the 239 who were followed up only thirty-nine returned to the firing line in eleven months. These figures do not correspond with those of the official history of the war, in which it is stated that of 13,408 cases of functional disease of the heart 11,403 were finally disposed of by return to duty. Experience of the results of systematic psychological treatment are not available.

Gas Neuroses

Fundamentally similar in structure but with a predominance of respiratory symptoms were gas neuroses (Elliott, Rogers, Hulbert). "Gas neurosis was to the lungs what effort syndrome was to the heart." An epidemic of "gas hysteria" was described by the official history of the American Expeditionary Force. Following desultory gas shelling spread over eight days, 500 men returned to one field hospital as gas casualties. The symptoms described were a feeling of fatigue, pain in the chest, slight dyspnoea, coughing, husky voice, an assortment of tingling and burning sensations referred to the throat, and some indefinite eye symptoms. Physical and neurological examination was practically negative. As these men came from battle-tested troops it was regarded as inconceivable that they were malingering; more probably a number of factors acted together at that time to lower morale and reduce inhibition to a state where many utilized any suitable extraneous opportunity as a route to escape from an undesirable situation. Simple reassurance was given and the patients were convincingly told that they would be able to return to duty on a certain day at some specified hour. Subsequently the symptoms were practically ignored and strict military discipline was enforced. Rapid recovery followed and the wave of cases ceased spontaneously at the end of eight days.

Organic Disorders with a Large Emotional Component

Warfare gave a unique opportunity for studying certain organic diseases in which emotional factors are alleged to play a prominent part, of primarily aetiological and aggravating importance. A review of the literature is disappointing. Most authors unfortunately confine themselves to a statistical evaluation of certain organic diseases in relation to emotional disturbances and nervous disorders.

Alimentary Disorders.—An increase in dyspepsia under the stress of warfare was frequently noted (Albu, Schmidt, Strauss, Romberg). Individuals who suffered from similar disorders in peace time were particularly affected. One-half of the patients fell ill before they had seen any front-line service, and a further one-third developed symptoms during the first week in the firing line. Constipation, gastric hypersecretion, vomiting and diarrhoea, and pyloric spasm were commonly seen. The personality type of the patients affected was definitely different from that in cardiac neuroses (Kutzinsky). There was no conclusive evidence to suggest that peptic ulcer emerged from the syndrome. Most authors agreed that the incidence of peptic ulcer during war was not higher than during peace time, but relapses of peptic ulcer were repeatedly seen in those who had suffered from it in peace time (His). Frequent onset of stress-dyspepsia or peptic ulcer on demobilization has been noted (Davies and Wilson).

Diabetes.—Diabetes was a rare condition among soldiers. There were only two diabetics in 40,000 returned American soldiers (Joslin). Strauss found the incidence in war hospitals to be 0.3 per 1,000, as compared with 1.2 per 1,000 in civilian hospitals. A pre-existing diabetes may be aggravated, accord-

ing to J. Noorden, and physical and emotional trauma were considered responsible for the onset of "war diabetes" (Lenné) in a few predisposed individuals.

Toxic Goitre.—The high incidence of toxic goitre in military hospitals noted by various authors was attributed to the mental and physical strain the soldiers had to undergo (White, Mott, Graham Brown, Beebe, Huddleson and Bailey, Tilling, Krehl). The incidence figures given diverge considerably, perhaps through personal variations in the use of the diagnosis. Cases have been reported in which the onset of the disease was immediately preceded by some severe emotional shock (Rohde, Richter, Rothacker).

SOME LONDON MEDICAL SCHOOLS AND "REVACUATION"

Newspaper headlines have a way of suggesting the absolute when it is the relative only which should be conveyed. Thus the announcement in one newspaper, "Medical Students Return to London," may have suggested a complete return to the central teaching hospitals from the home counties and further afield. That is not what has happened. There is a greater concentration of students in the metropolis than was the case a few months ago, but the position is not very different from what it was when a correspondent of this *Journal* undertook an inquiry of all the schools, the results of which were published on December 9, 1939 (p. 1155). A complete resumption at the hospitals in London is not possible so long as they are compelled to reserve one-third of their beds for civilian casualties, for the remaining beds may not be sufficient in all cases to provide clinical material for the students who would normally be in attendance. To take one example, at University College Hospital the arrangements for the summer term depend on whether further beds are opened at the centre; if they are not opened the new entry of clerks and dressers will be taught at the periphery, at what used to be Leavesden Mental Hospital, and will come into the centre for their second and third clinical years. The October entry of University College Hospital students went to Cardiff, and will stay there until they come back for their second year in London next October. The London (Royal Free Hospital) School of Medicine for Women has at present 163 clinical students working in London and only nineteen at its two associated hospitals in Hertfordshire; but at one of those country hospitals it is expected that many more beds will be open in the future, and in that case it is likely that a larger proportion of students will be working there instead of in Gray's Inn Road. The preclinical students of the metropolitan schools are for the most part remaining in the provinces, though the Middlesex contingent has returned to London from Bristol. But a strong intention is expressed in several quarters, notably at the London Hospital, to have the preclinical students back for the next autumn term unless, of course, air raids on London develop on such a scale as to make that course inadvisable.

Centripetal Movement

But, in general, as the out-patient and other services resume their normal aspect the dispersive movement is reversed. When our former article was written only one-fifth of "The London" students were actually remaining at Whitechapel; the proportion is now more than one-third. Indeed, if one counts as students at the London Hospital those who are at L.C.C. hospitals not far away and come to their own hospital in the afternoons for systematic teaching the proportion is two-thirds. The other third are at municipal and voluntary hospitals in the two sectors with which the London Hospital is associated, and it is considered that these institutions afford unrivalled opportunities for gaining experience in all branches of medicine and surgery. The London is withdrawing its students from all upgraded institutions—that is, converted mental hospitals and public assistance hospitals—because these hospitals receive "transferred sick" from central London, and such cases, which have usually already been investigated and diagnosed, or are of a special kind, having been transferred so as to be under a particular specialist, are not satisfactory for medical education and may give the beginner a false perspective.

At St. Bartholomew's, again, the students who were originally living in small outlying hospitals have all been drawn into three hospitals, the biggest proportion being at Bart's itself. In October about 180 Bart's students were in London, either at the central hospital or adjacent hospitals, and 280 at hospitals in the sector outside London. The school is now very well organized at three hospitals: at Hill End, St. Albans, students to the number of about 140 are in their first clinical year; at St. Bartholomew's itself about 240 are spending one and a half years; and at Friern, New Southgate, about eighty are doing their final nine months. Lecture courses are being given at all three hospitals, and pathology is being taught in two sections: during the first year at Hill End, and later on at Bart's. While the students have their teaching spread over a greater number of teachers the arrangement has the advantage that some of the teachers are actually living in the outlying hospitals, so that there is much closer contact between them and the students than in peace time. On the other hand, the transfer of a number of consultants in the Emergency Medical Service from whole-time to part-time engagements has reinforced the teaching staffs available in London.

Bart's is not running any firms as it does in peace time, but the London Hospital is re-establishing the medical professorial unit and there are to be three medical firms each under the charge of two honorary physicians, and three surgical firms each under two honorary surgeons, also the aural firm, the cardiac department, with beds, and the department of obstetrics and gynaecology. The out-patient departments and clinics, including the maternity district of the London Hospital, are nearly at their pre-war level. At the beginning of February 150 additional beds were brought into use for ordinary civilian cases, and there will be thirty beds for obstetrics and gynaecology. Junior clinical students will spend their first twelve months in the hospital, working for six months in the wards, then three months in the special departments, after which they will take a course in pathology, the teaching of which has been centralized at the parent institution. After instruction in anaesthetics and in obstetrics and gynaecology it is considered that they will be senior enough to be attached for six months to one of the associated municipal hospitals, afterwards returning to the London Hospital to attend the out-patient departments and for revision work preparatory to their finals.

This statement of the position at the metropolitan schools does not pretend to be complete—several of the schools have not even been mentioned—but it does illustrate the tendencies now that the effects of the dispersion are wearing off, and something approaching normal, or as near normal as anything in war time can be, has been reached. Some of the deans, while alive to the disadvantages of having staff and students scattered over the breadth of whole counties, feel that much has been gained by the experience, and that a certain distribution of students for varying periods over other hospitals in the sector might well form a permanent feature of medical training. One also gathers that so far as can be foreseen the entry for next year will be up to the level of last.

Heparin.—The successful use of heparin in forty blood transfusions is described. In some cases it was added to the blood after it had been taken from the donor; in others it was injected intravenously into the donor.—Use of Heparin in Blood Transfusions. S. W. Sappington.—*J. Amer. med. Ass.* July 1, 1939, 113, 22.

SOCIAL ENVIRONMENT AND WAR PROBLEMS

A Planning Council Established

A conference to which were invited representatives of bodies concerned with housing, social service, health, and education, organized by the Housing Centre (13, Suffolk Street, S.W.1), was held recently at the Royal Institute of British Architects to consider problems of social environment as affected by the war. The two sessions were presided over by Lord BALFOUR OF BURLEIGH and Lord HORDER respectively, and after a series of brief discussions on the various phases of the subject it was resolved to constitute a representative council of not fewer than thirty members whose immediate objective should be to promote, through research groups and by other means, a national plan for social environment and to make widely known the need for such planning.

The Family Doctor in the Social Framework

The subject of the family doctor and the part he may be expected to play in the extended health services which are coming into view was discussed by Sir WALTER LANGDON-BROWN, who began by quoting a remark of Dr. G. C. Anderson, Secretary of the British Medical Association, to the effect that to reconcile individual freedom with collective responsibility was the leading problem in the world of to-day. It certainly lay at the root of the medical services. What was wanted was a complete sequence of medical supervision throughout life, from the ante-natal to the old-age pension period. The organization of such, said Sir Walter Langdon-Brown, must come under the State or municipality, but so far as possible the work should be carried out by part-time medical officers. Only thus could the patient have a reasonable freedom of choice of doctor, essential in a personal relationship, and only thus could the general practitioner be associated with the scheme if general practice was to continue to attract the right type of man. It would be a bad thing if the patient could no longer refer possessively to "my doctor." Such facilities as *x*-ray and pathological examinations, which should be within the reach of all, not merely the very rich and the very poor, were so impersonal that there was no objection to this side of medicine being carried out by strangers.

As a constructive proposal he suggested an extension of health insurance on its present lines to all earning up to £250 a year and their dependants, and above that limit an optional insurance scheme with premiums on a sliding scale based on income tax assessments. Those with larger families would pay less for medical attendance, although the doctor would be paid on a capitation basis. Every doctor should have the right under such a scheme to accept private patients who did not wish to avail themselves of the option of insurance. If these suggestions could be worked out on a satisfactory actuarial basis he felt sure that the value of the family doctor as an adviser both in health and in illness would be enhanced. He stressed the word "adviser." The position of the doctor in respect of his patients was like that of a prime minister to a constitutional sovereign. He satirized the not infrequent statements about public men "defying" their doctor's orders. Such words as "defiance" and "orders" had no place in the doctor–patient relationship. Sir Walter Langdon-Brown went on to make some remarks about the "suburban neurosis," which was partly due to the loneliness that confronted many people in the dormitory areas.

Maintenance of Social Services

Lord HORDER, in opening the second session, said that the social services, though seriously affected, were not stagnating as a result of the war. The war brought a sudden shock to all routine, but after this was recovered from, life went on and with it the social services. The fact that many were living under a "tough" instead of a "tender" regime was not a bad thing for society. After pointing out the operation of the various Government controls and the constant review of all the major and some of the minor needs of life which was taking place in a country at war, also the fact that home nursing was being taught to about one in eight of the population, Lord Horder said that in fact war was not a bad time for social work. War was a barbaric and destructive thing, and yet it was a great accelerator. Things got done in war which would never be done in peace. All the applied sciences were speeded up by emergency, and in peace time it was the application of science to life which lagged so much behind. The emergency had done more for the National Fitness Campaign in six months than the campaign had been able to achieve in three years. But if he were asked whether the ordinary routine social services could be continued at the 100 per cent. level during the war his reply must be—"Don't be silly!" The prior claim and policy of winning the war had to be borne in mind, and God help the social services if the war were lost! He was prepared to support the proposed new council enthusiastically. It would be a field force to bring expert criticism to bear upon present emergency social measures, and should react upon the legislature by exercising pressure at the right moment for retaining what was useful or projecting something badly needed.

Health Planning

A number of social subjects were then briefly brought before the conference. That of health was introduced by Mr. RUSCOE CLARKE, secretary of the Joint Medical Socialist Committee, who said that all were aware of the possibilities for health progress which had resulted from modern science, but they also knew only too well that owing to lack of organization many of these advances could not be put into practice. His committee would not be able altogether to agree with the rosy picture Lord Horder had painted regarding the health services. Complaints were continually being received of a considerable reduction as a result of the war. No real health services appeared to have accompanied the evacuation of school children. The hospitals, crippled by the demands of the Emergency Medical Service, had still to go on looking after the ordinary sick. One advantage of the present situation was that the basic anarchy had been exposed—such, for example, as the divergence between preventive and curative medicine and the competition between private and hospital practice—and an opportunity was thus given to start planning here and now for better organization within medicine itself and a better relation of medical and health services to various social needs. Any planning must include the co-ordination of all the existing health services and a careful consideration of the economic factor, without which any scheme would be utopian.

Other speakers dealt with education, calling for a system of adult education by which science and art might be applied to the life of the individual and the community; with industry, demanding immediate action to give effect to the recommendations of the recent Royal Commission on the Distribution of the Industrial Population; and with agriculture, the speaker expressing the hope that with planning and direction from the top an increased responsibility would be assumed by the farming community. In the brief discussion on housing it was suggested that the garden city idea, now thirty years old, was out of date, and that it would be better to make our great towns into garden cities before starting to build new ones. That this was possible was shown by the fact that even in cities supposed to be overcrowded the density of houses to the acre was surprisingly small—for example, 6.5 in Manchester. The need for including recreation in the planning for the future was stressed by a member of the L.C.C. and a representative of the Council for the Preservation of Rural England.

The resolution to form the council was moved by Mr. G. SALTER DAVIES of the Institute of Sociology, and seconded by Mr. HARDING THOMPSON of the Town Planning Institute. It was spoken to by Mr. G. L. PEPLER, Chief Town Planning Inspector of the Ministry of Health, and a number of representatives of other bodies, and was unanimously carried. Professor PATRICK ABERCROMBIE, Chairman of the Council for the Preservation of Rural England, summed up the various discussions and closed a highly successful conference.

PANIC AND ITS CONSEQUENCES*

BY

WILFRED TROTTER

Some weeks ago a few remarks of mine were printed† on the need for active thinking in the conduct of war. Among the subjects I named as needing attention was that of the relations between Government and people. These relations, which were at first perfect, have already shown a slight but sensible decline that must deeply concern us all. It has been said that the uses made of the great powers given to the Government by the people have not always been wise, and have sometimes been such as to stagger common sense. It is of interest, therefore, to call attention to an element in the general situation that may have had an influence on many of the decisions of the Government now causing dissatisfaction. As this element lay beyond the direct reach of the human will we can discuss it without undertaking the odious task of distributing blame amongst persons who were doubtless animated by as pure a passion to serve the country as any of us.

Anyone who was in London in September and October, 1938, must have been aware of something new in the moral attitude of the people. Trenches were being feverishly scratched open, many of those who could afford it were openly running away, and people of whose nerves better might have been expected confessed to an uncontrollable alarm. It was generally believed that a first-class air raid might kill 50,000 and wound 300,000 more, that there was no real defence, and that an attack might occur at any moment. In the blackest days of 1917 and 1918 no such moral landslide was seen. The stoical endurance of the Londoner had gone, and in its place was something to which the thoughtful mind could not refuse the ominous name of panic. The weakness did not, however, spread indefinitely. The common people—as always, the moral background of the country—resisted and at length threw it off. But it lingered elsewhere, and especially, perhaps, among those who also had the heavy strain of being responsible for the safety of the country. Innumerable critical decisions had thus to be made by people exposed to and more or less deeply affected by the insidious solicitations of panic. The results of such a condition need for their understanding no more advanced a psychological equipment than a moderately enlightened common sense.

Man experiences two kinds of fear, which we may call individual fear and panic fear. Of the former we need only say that it is by no means incompatible with mental activity of the best kind, and that it is directly related to its object. Panic fear, on the other hand, is not directly related to its object, but is derived by its subject from the reactions of his fellows; it is therefore, so to say, infectious. Being an experience solely of social creatures, it has for its function the obliteration of the individual consciousness, which becomes merged in an impulse shared by its fellows. It thus happens that panic, however mild, has an immediate effect in weakening rational judgment. Every conclusion arrived at under its influence, however plausible it may seem in that deceptive medium, will be corrupted by departures from sound sense. In examining decisions reached under the influence of panic we are not to look for blunders and errors of judgment, for the fruits of ignorance or the fatuity of office, but for something at once more subtle and more characteristic. We are to look for decisions that could have been reached only by people in whom the faculty of practical reason was actually impaired.

The hypothesis that vast air raids were inevitable upon or even before the declaration of war was always a dubious one, and rested on all its elements being greatly magnified; it also ignored the fact that the German military command, however purged of its best minds and however infatuated with *Schrecklichkeit* as an end in itself, was the best judge of short-range strategy in the world, and little likely to waste its strength on excentric blows that could not be followed up. The idea, however, was not unreasonable and certainly deserved all consideration. Nevertheless, panic insisted that a modest probability must be treated as an immediate certainty, and used the hypothetical horrors it had foretold as part of the evidence that they would occur. A total black-out was enforced without compromise or graduation or any provision for the devoted pedestrian. The consequences may well become a classical example of the staggering paradoxes that result from mixing good intentions with panic. Deaths by violence on the roads rose in the first month of the war from 500 to 1,100. Thus by sitting quietly at home Hitler's air force was able to kill 600 British citizens at a cost to itself of exactly nothing.

With all its crudities the black-out is no more than a mild example of the effects of panic. Many other instances lie about us of which it can be maintained that they embody decisions which *no normal mind in any circumstances* could have assented to. Some happily are merely grotesque. Such escapades as carting tea about the country with the effect of eluding at once both bombs and consumers, and the outbreaks of a fatuous secrecy, deserve no more than a smile. But what are we to think of patients with infectious tuberculosis discharged to spread the disease; of medical practice half paralysed and medical education wholly disorganized; of the great hospitals three-quarters empty; of elementary education crippled and higher education almost at a standstill?

I have expressed relief that we should not be concerned in the distribution of blame. There is none to distribute. We have discussed a natural phenomenon and its results. If these observations have been just, certain considerations of practical importance proceed from them. The first is that decisions bearing the diagnostic marks of having been affected by panic should be reviewed without mercy or any regard for the saving of face. The second is to take to heart the fact that under the influence of panic it was possible to ignore almost completely two kinds of strength in which this country is eminent if not unique—its capacity for courageous endurance and its principle of reasonable compromise.

* A paper written shortly before the author's death.
† *Times*, September 26, 1939.

Applications are invited for Leverhulme fellowships or grants in aid of research, intended for senior workers who are prevented from carrying out research work by routine duties or pressure of other work. The trustees are also prepared to consider applications from groups of workers engaged upon co-operative programmes of research, particularly from those engaged upon long-distance programmes or in institutions in which the normal facilities for research have been curtailed by the war. The duration of the awards will not normally extend over more than two years or less than three months, and the amount will depend on the nature of the research and the circumstances of the applicant. Forms of application, returnable by March 1 at the latest, may be had from Dr. L. Haden Guest, Kingscote House, 1, Watergate, Blackfriars, London, E.C.4.

Nova et Vetera

A HISTORY OF OPHTHALMOLOGY

The series of primers on the history of medicine known as "Clio Medica" now includes a volume on the history of ophthalmology by Dr. Burton Chance of Philadelphia.[1] He has written an attractive little book. He begins with the earliest times of which there are records: in Mesopotamia, the nursery if not the cradle of culture, where the eye was sometimes held at the same valuation as that of life, and where night blindness was recognized and recorded. He passes on to early Egyptian, Chinese, Graeco-Roman, and Arabian ophthalmology; and so to the West through the centuries from the sixteenth to the present time. Then he takes up certain subjects: such as sympathetic and focal diseases, refraction and ocular movements, colour vision and blindness, and the use of drugs and surgery. Next he considers ophthalmic hospitals and teachers, and books and literature; and particularly contributions in England and America. Finally he deals with the prevention of blindness, and the care and education of the blind. In this last section there is an astonishing mistake. On page 205 he writes: "Most of the European countries and the English colonies provide by taxation for the education of the blind. The United Kingdom stands alone in allowing the education of the blind to depend upon charity." In point of fact the United Kingdom spends on the blind more money proportionately to its population than any other country in the world. By law every education authority has been for many years responsible for the training of the blind in its area. These authorities maintain everywhere excellent schools. Dr. Chance has forgotten that the sight-saving schools which have developed with such enthusiasm in the United States were first started under the aegis of the London County Council Education Committee, and that the need for these arose after an examination of the L.C.C.'s blind schools. It is true that in this country we still have several voluntary or "charitable" blind schools; but where these are used for children the local authority pays for their education therein.

The book is well worth reading; it will revive many memories and stimulate reflection; but the binding will be hated!

Reports of Societies

VALUE OF PRE-ANAESTHESIA MEDICATION

At a meeting of the Section of Anaesthetics of the Royal Society of Medicine on February 2, with Dr. HAROLD SINGTON in the chair, a discussion was held on premedication, which was broadly defined as the administration of drugs during the period immediately preceding induction of anaesthesia.

Dr. ERNEST LANDAU said that premedication served three purposes. It provided a psychological sedative, which was advantageous to both patient and anaesthetist. The injection of omnopon grain 1/3, scopolamine grain 1/150, would often supply just the amount of "Dutch courage" to convert a terrifying ordeal into a comparatively trivial incident. It also enabled anaesthesia to be induced and maintained with a lower concentration of the anaesthetic employed. Further, and most important of all, it produced a degree of respiratory depression, or, more accurately, decreased the sensitivity of the respiratory centre to carbon dioxide stimulation, which was, of course, the only stimulus to respiration. Ether in the lighter stages of anaesthesia increased the sensitivity of the respiratory centre, but in deep anaesthesia diminished it. Fear combined with light ether anaesthesia increased the sensitivity of the respiratory centre to such an extent that the normal CO_2 tension would stimulate it and produce over-breathing, and when the deeper stage was reached and the centre depressed the lowered tension was insufficient to maintain respiration, so that apnoea resulted even though the patient was only partially anaesthetized. The extent to which depression of the respiratory centre was to be permitted would vary according to the method of anaesthesia, the type of operation, and the age and condition of the patient, and the speaker briefly dealt with these considerations.

His own preference and that of most of the surgeons for whom he worked was for spinal anaesthesia combined with light narcosis by nitrous oxide, oxygen, cyclopropane, or pentothal. Much of the collapse occurring during spinal anaesthesia was psychic in origin, and certainly with premedication, light narcosis, and a liberal supply of oxygen the condition of the patient seemed to be better than when premedication alone was used. Premedication should be light because the effect of the drugs used for spinal anaesthesia was unpredictable. If heavy premedication was used the additional depression produced by the spinal anaesthetic might prove embarrassing. It was safer to premedicate lightly, and, if necessary, either supplement the premedication with light narcosis or give a supplementary injection of the drugs used for premedication.

On theoretical grounds morphine was a desirable safeguard if open ether was to be given, yet the respiratory depression might be such that induction and maintenance of anaesthesia became difficult and post-operative recovery prolonged. For this reason the semi-closed or closed method with gas-oxygen was preferable. Anaesthesia could be induced rapidly with gas and oxygen and ether added in minimum quantities; by careful technique and proper control of re-breathing a quiet anaesthesia might be obtained without subjecting the patient to saturation with ether. If chloroform must be used, atropine and morphine were invaluable. With cyclopropane-oxygen anaesthesia a rather less degree of depression was desirable, and it seemed to him that only a minimal degree of premedication was required. Owing to the very rapid induction the respiratory stimulating effect of cyclopropane was not very noticeable, the centre rapidly becoming depressed, so that over-breathing should not occur even with very light premedication. His standard dose for an adult was omnopon grain 1/6, scopolamine grain 1/150. Premedication used before the intravenous barbiturates would permit smaller quantities to be given to attain the desired result.

With regard to the drugs used, he believed that the change from atropine to atropine and morphine marked an important step in the realization by anaesthetists of the advantages of a small degree of depression. The addition of morphine helped to minimize the undesirable side-actions of atropine—namely, its cerebral excitant action and its effect in raising the basal metabolic, the respiratory, and the pulse rates. He used this combination for elderly patients as it produced on the whole rather less depression than omnopon-scopolamine, though the morphine might on occasion be responsible for some vomiting and nausea. Scopolamine differed chiefly from morphine in that it was a cerebral depressant, and augmented rather than neutralized the action of morphine. It had a rather shorter action than atropine, and might be less apt to encourage the formation of the thick plugs of mucus which some authorities suggested were responsible for post-operative pulmonary collapse. Before gas-oxygen anaesthesia, where maximum depression was required, he used morphine-scopolamine in what might be considered maximal doses, and before other forms of anaesthesia omnopon-scopolamine in doses ranging from grain 1/6 to 2/3 omnopon and grain 1/150 to 1/100 scopolamine. For young persons between the ages of 14 and 18 and adults over 60 he gave half doses of omnopon-scopolamine. These injections should be given one and a half hours before operation, so that the maximum effect was exerted at the beginning of the anaesthesia

[1] *Ophthalmology*. By Burton Chance, M.D. Clio Medica. (Pp. 240; 6 illustrations. 2 dollars.) New York: Paul B. Hoeber.

and not during the later stages or after the patient's return to bed. Smaller doses of these drugs might be given to young children, but the fractional doses described might lead to mistakes, and for that reason he generally used nembutal by mouth with atropine.

It was important before prescribing any of the drugs to inquire of the patient and his medical attendant as to any possible idiosyncrasy. Premedication should be withheld from patients undergoing operations on the brain; atropine only was permissible in those cases. No morphine or barbiturates should be given before Caesarean section; here the concern was for the respiratory centre of the infant. For operations following which an active cough reflex was essential the premedication and anaesthetic must be planned so that these reflexes were active before the patient left the theatre. He did not believe that adequate premedication correctly timed added to post-operative risk. The depressant effect of morphine was more than compensated by the decreased amount of anaesthetic required, with the resulting earlier return of muscular tone.

Selection of Drugs

Dr. J. U. HUMAN said that owing to modern advances in anaesthesia operations were performed that would have been considered hopeless risks a few years ago. Therefore anaesthetists must now select the premedication for each case with the greatest care. The general rule in pre-operative sedation should be to give less of the hypnotic drug the greater the operative risk. Atropine was indispensable, for there was no other drug with a good drying-up action which was equally innocuous to all patients. Atropine, however, raised the metabolism and therefore made administration of nitrous oxide and oxygen only more difficult. It accentuated the signs of anaesthesia, and so was invaluable when demonstrating such signs to students. Morphine and omnopon lowered the metabolism, making administration of nitrous oxide and oxygen easier. Intravenous pupil-contracting doses of morphine or omnopon were useful when an immediate effect was desired. Hyoscine or scopolamine dried secretions more effectively than atropine, but was more restricted in its use as it could not be given to either the very young or the very old. In the proportions of omnopon grain 2/3, scopolamine grain 1/150, restlessness would never occur, as the omnopon would control the scopolamine. Nembutal was considered only as given by the oral route in capsule form. It was uncertain in its action unless a hypnotic was injected at the same time so as to abolish nervousness and gastric inhibition. A good dosage rule for children was grain 1/6 for each year of life.

Relative Advantages and Disadvantages

Dr. F. B. MALLINSON said that the chief value of premedication from the point of view of the patient was the reduction of apprehension and the increase of comfort, the lessening of after-pain, and the decrease of post-operative vomiting. From the point of view of the surgeon the method was recommended for the greater muscular relaxation, the quieter respiration, and the reduction of psychic shock which were obtained; while from that of the anaesthetist the advantages were in the smoother and quicker induction, the drying of the secretions, and the lessened necessity for supplementary drugs. Among the disadvantages to be considered were the additional labour for all concerned, the possible increase in pulmonary complications as a result of the depressed respiration, and some sluggishness of post-operative reflexes.

Turning to different drugs, he described the advantages of atropine as consisting in the drying of secretions, and the influence on the vagus and on adrenaline secretion. Its chief disadvantage was the stimulation of metabolism. The combination of atropine with morphine reproduced to a certain degree all the advantages of atropine, except that vomiting appeared to be increased in certain cases. Omnopon as a substitute for morphine had some advantages in this respect; omnopon grain 2/3, scopolamine grain 1/50, could be administered to patients between the ages of 18 and 65, with smaller doses to the elderly, the feeble, or the badly shocked. He next discussed the problems of basal narcosis and the respective advantages of the three routes—oral, rectal, and intravenous. Nembutal was a drug most commonly given orally, but when given alone it was apt to be unreliable, and was more certain in its results when combined with omnopon and scopolamine. It could be given rectally in children, but paraldehyde was more reliable, and might be given with almost complete safety; its disadvantages were the prolonged action and the smell. The best preparation to use by the rectal route was avertin, which was certain in its action, had a high degree of safety, and was particularly well tolerated by children. In suitable cases omnopon and scopolamine might be combined with avertin, but those drugs reduced the margin of safety which avertin possessed. Evipan intravenously gave good results, but there were two complications in which it should not be used—namely, asthma and a badly damaged liver; pentothal was more constant and reliable. Nembutal had also been used intravenously, but its prolonged action was a disadvantage, also its liability to cause post-operative restlessness and excitement.

Among other points made by this speaker was the necessity for complete unconsciousness in children before they were taken to the operating table. The psychic trauma which might follow conscious experience of anaesthesia was sometimes irreparable. For cases of thyrotoxicosis avertin combined with omnopon was probably the method of choice. Finally he touched on cranial surgery, saying that the use of atropine here required great caution. No heavy premedication was permissible. A small dose of omnopon might be used, but hyoscine was too dangerous. Avertin was favoured by some anaesthetists and had the advantage of lessening the haemorrhage, but others feared its respiratory depressive action.

General Discussion

Professor R. R. MACINTOSH did not think the speakers had brought out clearly enough the value of morphine in nitrous oxide anaesthesia. Morphine was an excellent premedication for children, but the dose must be regulated according to body weight. He personally gave evipan before Caesarean section, and the infant was none the worse for it. It must be a small dose; only in larger doses was it troublesome. A very important point was that asthma was a contraindication for barbiturates. Dr. JOSEPH BLOMFIELD expressed the view that it was a bogy that a patient could be killed from overbreathing under ether. Dr. F. F. WADDY did not agree with the statement that children were likely to have psychic shock if they did not have premedication. The handling of children in preparation for an operation was very important; they must not be bullied, and must be allowed to think they were getting their own way. With regard to chronic bronchitics, he thought atropine was a hindrance; there was a certain type of chronic bronchitic who must expectorate, and if this was prevented harm was done. He also discussed the administration of nembutal and the value of splitting the dose or giving two or three preliminary doses to apprehensive patients so that a mild sedation was achieved before the narcotic dose was given.

Dr. GERALD SLOT described some work he had been doing on the pharmacology of barbiturates. In deaths which followed premedication it was very important to determine whether it was the respiration or the circulation that failed first. In his opinion cases of barbiturate poisoning presented a picture of failed respiration; the heart was usually beating quite well. For dealing with barbiturate pneumonia he had found picrotoxin the best agent. With regard to asthma, it had been his practice to give asthmatics some barbiturate to help them to sleep, and after innumerable tests it was his impression that the incidence of sensitivity of asthmatics was no greater than among other sections of patients. Dr. MINNITT raised some questions as to the value of premedication in certain cases from the point of view of after-effects.

Correspondence

The Tourniquet

SIR,—Ever since a certain number of accidents happened in the last war due to tourniquets being left on a limb for a great number of hours there has been a feeling that tourniquets should rarely, if ever, be used.

Every student of first aid is warned against the tourniquet. As, in this country, it is unlikely that any patient will be left for more than half an hour from the time of an accident to the time that he arrives in hospital, I cannot help feeling that this fear of tourniquets is unnecessary and may lead to haemorrhage being uncontrolled.

Am I not right in saying that in the Spanish war it was found that a tourniquet did no real damage if applied for an hour, or even two hours?—I am, etc.,

London, W.1, Feb. 9. MALCOLM DONALDSON.

Treatment of Wounds with "Zipp"

SIR,—On reading in the issue of the *Journal* for December 2, 1939 (p. 1106), the summary of the discussion which followed Dr. J. Trueta's very important and remarkable paper on war fractures treated by the closed method, I observed that an unpleasant feature of this otherwise admirable treatment was emphasized both by Dr. Schulenberg and by Dr. Trueta himself. This feature was the disagreeable smell caused by the saturation of the plaster with the discharges of the wound, and Dr. Trueta went so far as to say that "the necessity for changing the plaster generally depended on the bad smell, and if there were means of ameliorating the smell it should be possible to retain the first plaster to the end." I wish to emphasize the fact that the smell factor can be completely eliminated if the gauze introduced into the wounds for drainage is first liberally treated with an antiseptic paste to which Dr. J. C. R. Buchanan and I have given the name of "Zipp." The deodorant action of this paste is quite remarkable, and in addition it possesses in itself healing powers and greatly enhances the draining capacity of gauze with which it has been impregnated.

To quote from page 211 of my *Surgical Handbook for Hospital Assistants in the Tropics* (John Bale Medical Publications, 1938), Zipp "was devised by Dr. J. C. R. Buchanan and myself in 1931, in the course of an investigation which we had undertaken into the cause and treatment of tropical ulcerations. It consists of zinc oxide 1 part, iodoform 2 parts, and liquid paraffin 2 to 3 parts. The ingredients were placed in a mortar and ground together with a pestle until a paste was formed of the consistency of clotted cream. It is obviously a modification of Rutherford Morison's well-known Bipp, than which, however, it is both safer and much more effective. If more than a mere trace of Bipp is placed in a wound there is grave danger of iodoform poisoning. Such poisoning never follows the use of Zipp, even if a deep wound is packed from top to bottom with this paste. . . . Moreover, Zipp stimulates the growth of healthy granulations and promotes rapid healing of the tissues. I use is as a routine in the treatment of chronic ulcers, and also in the post-operative treatment of acute osteomyelitis. In both types of case the affected limb is, after application of the paste, encased in plaster-of-Paris for at least a week (and often for several weeks, provided that the patient's condition remains satisfactory)."

In a paper on ulcers in the African native (*Trans. roy. Soc. trop. Med. Hyg.*, November, 1933, **27**, No. 3), Buchanan and I described fully the factors which led us to devise and utilize Zipp in the "lock-up" treatment of tropical ulcerations. Thus, plain petroleum jelly was early abandoned as a local application because of the "evolution of an odour so overpowering that it sickened alike the patient, his fellow-sufferers, and the entire hospital staff, and thus led to anorexia and consequent loss of body weight." A severe ulcerative dermatitis also frequently followed the petroleum jelly treatment. Neither of these complications was experienced when Zipp was used, and for this reason we had no hesitation in modifying the Winnett-Orr treatment of osteomyelitis by substituting Zipp (in extremely liberal quantities) for petroleum jelly, nor did we ever have reason to regret this substitution.

As a tropical surgeon in a part of the world which is still peaceful my experience of compound fractures has been limited, but for some years now I have been treating such cases by a method which is in all essentials identical with that of Trueta, except that the gauze packed into the wounds for drainage is liberally impregnated with Zipp. The results have been admirable and there has been no smell. While it would be obviously ridiculous for me to attempt to draw conclusions from my personal experience of Zipp in the treatment of a relatively small number of cases of compound fracture, I do hope that those who have the opportunity to handle such cases on a large scale will at least give Zipp a trial. I feel convinced that it will overcome the one serious drawback to what appears to be the ideal method of treating serious war wounds.

My thanks are due to Dr. R. R. Scott, *M.C.*, C.M.G., Director of Medical Services, Tanganyika Territory, for permission to submit this letter for publication.—I am, etc.,

W. K. CONNELL, F.R.C.S.,
Tanga Province, Jan. 21. Surgical Specialist, Tanganyika Territory.

Treatment of Air Raid Casualties

SIR,—In asking for advice regarding the treatment of severely injured cases contaminated with mustard gas Dr. J. B. McKay's letter in your issue of February 3 (p. 190) raises a very awkward "snag." The problem can be stated as follows: (1) The patient must be completely decontaminated before he can be accepted by a hospital as an in-patient. (2) This process must be carried out with as little manhandling as possible. (3) The wound or wounds must be kept as clean as possible in the process. (4) If the patient is severely shocked or is bleeding freely a medical officer must see him before anything further is done. It appears very inadvisable that lay attendants should proceed with any treatment except the routine irrigation of the eyes, in these circumstances, without medical supervision. I am aware of the difficulties, but can see no other way of ensuring adequate care for such cases.

I suggest that the following procedure I have devised for the attendants at the decontamination centre of which I am in charge might be adopted:

1. The medical officer must be informed if a case is severely shocked, is bleeding freely, or has a compound fracture.
2. The clothing must be removed gently, being slit off with scissors if it cannot be removed easily otherwise. (The scissors supplied should have adequately large finger holes to permit of their use while wearing decontamination gloves.)
3. The wound or wounds must be decontaminated by washing out with the antiseptic lotion (that is, eusol from a douche can hung on the wall beside the trestles for the stretcher). The wound is then covered with a dressing, which is in turn covered with a waterproof material until the rest of the body has been washed and dried.
4. The rest of the body is decontaminated in the usual way.
5. If a limb is fractured it must be steadied by one of the attendants, applying slight traction, throughout the process.
6. The patient is dried and placed on a clean stretcher, to be reclothed so far as is necessary in the "dressing" room. Any further attention such as the application of splints or further treatment of the wound is carried out in the room before the patient is taken into the hospital.

This outline would appear to be a practical method for the guidance of non-medical attendants in a decontamination post. I should be glad to hear of any improvements in this plan which may occur to others interested in the running of such a station.—I am, etc.,

ELIOT MACKWORTH.

London, N.7, Feb. 6.

Chloramine-T in Mustard-gas Burns

SIR,—In Mr. John Foster's article in the *Journal* of December 16, 1939 (p. 1181), it is stated that the effect of a 0.5 per cent. solution of dichloramine-T in chlorcosane in human eyes burnt by mustard gas is found to be beneficial. This being so, it is possible that the effect of dichloramine-T or chloramine-T in burns of the human skin by mustard gas may also be of value. Chloramine-T is soluble in water, while dichloramine-T is insoluble. In this connexion I beg to draw attention to a letter of mine in the *Journal* of March 4, 1933 (p. 367) suggesting the use in ordinary burns and scalds of a 2 per cent. solution of chloramine-T in an emulsion made of equal parts of olive or ground-nut oil and lime water, the chloramine being soluble in the lime water. The solution is stable, unlike the solution of dichloramine-T in chlorcosane. This "emulsion" in 2 per cent. or stronger form may very possibly prove to be beneficial in burns of the skin by mustard gas if applied immediately or after preliminary decontamination. Its possible use as a prophylactic also, owing to its creamy nature, should not be lost sight of.—I am, etc.,

Capetown, Jan. 17. J. WALKER TOMB.

Mustard-gas Blister Fluid

SIR,—In a letter describing an experiment with mustard gas which you published on July 29, 1939 (p. 252), I said: "In the old days I took no precautions about the fluid out of the blisters and was unaffected by it. Now extensive further blistering and irritation was caused by neglect to protect the surrounding skin and hands from contamination with the fluid." Further experiments indicate that the secondary irritation is caused not by the blister fluid but apparently by mustard gas, or one of its reaction products, travelling subcutaneously. The fact that the blister fluid is harmless was confirmed by absorbing some of the first fluid out of the blisters on lint and placing this over another part of the skin, which was itself hypersensitive from a recent experiment made upon it. No effect was produced even after twelve hours' exposure to the fluid.

It should be mentioned that the blisters from which the fluid was taken were made by exposure to the vapour, and it may be that fluid from blisters made by heavy contamination with mustard-gas liquid might have some irritating effect. The question of the conditions, if any, under which the blister fluid may be harmful should be settled by further experiments, because a great deal of time and material will be wasted in changing dressings if it is wrongly believed that contact with the fluid has in all cases to be avoided.—I am, etc.,

Newcastle-upon-Tyne, Feb. 5. H. A. SISSON.

Night Blindness in the B.E.F. in 1916

SIR,—In the *Journal* of February 3 (p. 190) the statement was made by Professor Millais Culpin that night blindness was practically non-existent in the British Army in France in the last war. This is quite untrue. In the spring and early summer of 1916 I made a careful examination of twenty-five men complaining of this condition who were sent to me by Mr. Frank Moxon, ophthalmic specialist at No. 4 General Hospital, Arcques, Pas de Calais, with whom a joint investigation of these cases was planned. The movements of war intervened to prevent this being pursued to a conclusion, and I cannot speak of the views of my clinical colleague, but it may be worth while abstracting from notes made at that time what were the results of the laboratory investigations.

Nineteen of the hemeralopes were from the trenches, three from the L.-of-C., and in two cases their place of origin was not recorded. The investigations made upon them were controlled, so far as possible, by parallel investigations made upon a series of twenty-seven soldiers stationed in the Saint-Omer area who were not suffering from night blindness and who were not exposed to the conditions of life in the trenches. The summarized results obtained in these two series were as follows:

Blood Examination (Mean Figures)

	Haemoglobin	Red Cells	Colour Index
Hemeralopes	95	5,540,000	0.9
Controls	97	5,510,000	0.9

Differential Counts

	Total Count	Neutrophils	Lymphocytes	Transitionals	Eosinophils	Basophils
Hemeralopes	8,700	60.5	34.3	2.4	2.8	0.7
Controls ..	—	62.0	31.2	3.2	2.2	0.8

(At the time when these counts were done the monocyte had not reached its present status and was usually known as a "transitional cell.")

It appears from these observations that no general haematological differences were present between the hemeralopes and the controls, but examination of the individual cases showed that, although the mean figures for the lymphocytes in the two series are comparable and are within the limits usually accepted as normal, the figure of 35 per cent. was exceeded by eleven out of twenty-five hemeralopes but only by five of the twenty-four controls. When the absolute figures for the former were investigated it was found that in these eleven hemeralopes the lymphocytosis in every case was an absolute one. The changes were never very marked, the total lymphocytes being between 2,900 and 4,300 per c.mm. The normal figures for lymphocytes given by Whitby and Britton are 1,500 and 2,700 c.mm. Two of the patients showed some enlargement of the superficial lymph glands.

The urine was examined in all the night-blindness cases on several occasions. A rough estimation of the amount of indican present was also made by Jaffé's method, and the sediments were examined after centrifugalization. In four of the hemeralopes some albumin was present, Heller's test being positive.

Case 1.—Albumin detected on one of three occasions. The sediment contained a few red cells and a slightly increased number of leucocytes. No casts. Specific gravity moderate. Blood pressure 118 to 120 mm. systolic. *Case* 2.—Albumin found once in three examinations. Nothing abnormal in the sediment. Specific gravity moderate. Blood pressure 128 systolic. *Case* 3.—Albumin in small traces constantly present. The urine tended to be of a low specific gravity. No casts. Blood pressure 134 to 137 mm. systolic. *Case* 4.—Albumin constantly present, 0.5 to 0.75 part per 1,000. Specific gravity moderate. Some hyaline and hyalogranular casts were present, some of which showed degenerate epithelium. A few red cells occasionally seen. Blood pressure raised: 150 to 160 mm. systolic. In addition, in three other cases the urine, although failing to give Heller's test, showed abnormal substances in the sediment, two containing occasional red corpuscles and two showing a few mixed casts. Five of the six individuals who had urinary abnormalities were included in the eleven cases with lymphocytosis. The appearance of red cells in the urine was noted with interest at the time in connexion with the possibility of scurvy. No other signs of scurvy were noted, and since admission to hospital the men had been living on a diet which included fresh vegetables. No albuminuria was found in the controls. In respect of the presence of an excess of indican, no difference was noted between the hemeralopes and the controls. The Wassermann reaction was done in all but one of the cases of night blindness and was negative.

These investigations were carried out in a mobile laboratory and quite independently of those of Moxon, since we both wished to obtain our results without being influenced by the other's opinions. At the time at which they were undertaken the effect of vitamin A deficiency in producing night blindness was not known, but we were of the opinion that, if the condition proved to be a genuine one, its pathological basis would be found in defective nutrition—hence our interest in the question of scurvy and our belief that soldiers employed behind the lines would serve as satisfactory controls. The

tentative remark appended to my notes in 1916 reads: "Looking at these men as a set of men, and quite apart from any question of specified disease, they appear to contain an unusual proportion of individuals showing slight departures from the normal short of actual disease. . . . If hemeralopia is to be explained as a functional condition connected with derangement of the eye, either in its local mechanism or in connexion with the general metabolism, . . . certain of these men support that idea."—I am, etc.,

British Postgraduate Medical School, London, W.12, Feb. 7. J. HENRY DIBLE.

Night Blindness

SIR,—With reference to the letters appearing from time to time on the above subject. I was in charge of the Jubbulpore Central Jail in India in 1910. The majority of the prisoners were from jungle tribes. It was comparatively common to receive complaints of night blindness during the weekly inspections. The prisoners so affected invariably asked for and received raw liver. This was an infallible cure. Later, in Mesopotamia, Indian troops in Basra in 1914 occasionally complained of night blindness while on duty at night, and were advised to eat raw liver, with a satisfactory result. None of these patients was psychoneurotic. Vitamin deficiency would appear to be the cause of the condition in its usual form, excluding a certain number of possible malingerers.—I am, etc.,

W. J. POWELL,
Marlborough, Feb. 3. Colonel I.M.S. (ret.).

Teaching of Anaesthesia

SIR,—At a time of great change we have the opportunity to carry out improvements in our method of medical education, and I would like, with great respect, to call the attention of those responsible to the very urgent need for training medical students in the science of anaesthesia.

It has been my experience that a very large proportion of the newly qualified men who leave our medical schools are completely lacking in the most elementary knowledge of the technique of the administration of anaesthetics by simple methods. The great majority of medical students are going to become general practitioners, and, although a profound knowledge of medicine and surgery is not necessary in general practice, every general practitioner has to administer an anaesthetic from time to time. The most frequent call for this service will be for dental extractions, yet how very few men, on leaving hospital, can give a good nasal gas. The result is that the whole medical profession suffers greatly in prestige among dental surgeons and patients. This in itself is unfortunate, but not of national importance; but when we come to the field of general surgery unskilled anaesthesia means too often the death of the patient. The number of deaths on the tables has increased of recent years, but deaths on the table do not tell the whole story; a very large proportion of "deaths following operations" are really "deaths due to bad anaesthesia." It is indeed admitted by all that the skilled administration of the anaesthetic is of equal importance with the skilful performance of the operation. There can be no doubt, in fact, that every year many lives are lost which might have been saved had competent anaesthetists been available.

There has recently been a great public outcry about maternal mortality; various inquiries have been held from which our profession did not emerge without discredit. The result has been that midwifery tends to be taken more and more out of the hands of the general practitioner, and this tendency will continue. This condition of affairs need never have arisen had we been willing to face realities and set our own house in order. We have been taught a very sharp lesson and one which we should remember. We cannot expect dental surgeons, general surgeons, and the public to be content with incompetent anaesthesia indefinitely, and it is absolutely imperative in the public interest that anaesthesia should occupy in the medical curriculum a place of importance equal to that of midwifery, surgery, or medicine. This can easily be done, without lengthening the medical course, by shortening much of the time spent on studying matters which are of purely academic interest.

The general practitioner has, often many times a week, to take the life of his patient in his hands when he renders him unconscious for some surgical proceeding, and he should be reasonably competent to see that his patient's loss of consciousness does not pass into loss of life.—I am, etc.,

New Barnet, Feb. 1. JOHN ELAM.

Endotracheal Anaesthesia

SIR,—In his letter in the *Journal* of February 10 (p. 231) Sir Robert Kelly apparently reduces his objections to the modern wide-bore endotracheal tube to a plea for positive pressure applied at the bifurcation of the trachea. Is positive pressure necessary in every case? Here the following quotation[1] from three eminent authorities—Waters, Rovenstine, and Guedel—may be of interest: "During the second decade of this century we find endotracheal anaesthesia in a stage of rapidly growing popularity. . . . However, there seemed to be some very definite deterrent to its progress. To-day we look back and see this deterrent in the physiological unsoundness of the positive pressure insufflation technique."

The modern wide-bore tube method encourages the normal functioning of the excellent mechanism of respiration with which man is already equipped. In any special circumstances, however, the wide-bore tube, coupled as it usually is to a gas–oxygen machine, provides for the application of positive endotracheal pressure equal to any human requirement, and this pressure can be applied more effectively thus than through a small catheter around which free expiration is allowed to occur. The technique known as "controlled respiration" exemplifies the scope and utility of the wide-bore tube should stasis of respiratory movement be required for any special purpose.

Two other points in Sir Robert Kelly's letter published on February 10 require comment: (1) "The Magill tube is too short."—The tubes as supplied by the authorized manufacturers are, when uncut, of sufficient length to reach the bronchus. I have employed them on several occasions for endobronchial anaesthesia. (2) "The Magill tube is too fat."—This statement is beyond my powers of interpretation. The tubes are made in a series of calibres suitable for patients of all ages from birth upwards. The selection of the correct tube for the individual patient is then merely a matter of judgment based upon experience.—I am, etc.,

London, W.1, Feb. 12. I. W. MAGILL.

Treatment of Gastro-intestinal Achalasia by Spinal Anaesthesia

SIR,—The paper on the treatment of gastro-intestinal achalasia by spinal anaesthesia in the *Journal* of December 23, 1939 (p. 1224), by Professor E. D. Telford and Mr. H. T. Simmons has given rise to so many inquiries about the exact technique used that I should be obliged if you would insert the following account of it to save much individual correspondence.

Some of the questions asked relate to percaine. I see no reason to suppose that percaine or any other spinal anaesthetic that is effective in reaching the nerve fibres involved in the particular case would not be equally successful. My reasons for not using percaine are two in number. (1) The quality of anaesthesia given by percaine is sometimes poor. The patient does not feel acute pain but is much more aware of the operative proceedings than with procaine or one of the procaine series. (2) In my experience heavy solutions are more reliable in the sense that the height of the anaesthesia is more accurately controlled. Also, if a mistake is made with a heavy solution in the direction of excess a few extra posterior roots are involved and that is no matter; indeed, I think patients are more comfortable than if the anaesthesia is only just high enough. If, on the contrary, excess of a light solution is used then anterior roots are

[1] *Anesth. & Analges.*, 12, No. 5, 201.

affected, with corresponding fall of blood pressure and perhaps weakening or even paralysis of respiration. Not so many months ago a case was reported in which an excessive dose of light percaine caused the death of a patient even though the operation that was to have been performed was on the knee. I doubt if an equivalent dose of a heavy solution would have caused this fatality.

The technique that I use is as follows: (1) The blood pressure is taken and the strength of the interossei tested by means of a sheet of paper held between the first and second fingers. (2) The patient is then put on the table in the lateral position and the table sloped 3 degrees Trendelenburg, shoulders down, head raised; 0.1 gramme of ephedrine in 2 c.cm. of a 1 per cent. solution of procaine is injected into the skin and tissues along which the spinal needle is expected to travel. (3) Then 2.4 to 2.8 c.cm. of decicaine solution (1 per cent.; sp. gr. 1026) is taken into the syringe and, after tapping the theca, diluted with cerebrospinal fluid up to 4 c.cm. to 4.5 c.cm. and injected. The space chosen is that between the second and third lumbar vertebrae as a rule. The varying quantity of decicaine solution and that of the cerebrospinal fluid depends upon the height and to some extent on the build of the patient. In three minutes, if the height of the anaesthesia is tested, it will be found in the neighbourhood of the nipple line. If not above it, the slope of the table should be slightly increased to 5 or 7 degrees. It will be found that the area of anaesthesia slowly creeps up to the first dorsal distribution. The reaction of the interossei may be tested any time now and will be found to have weakened considerably. The blood pressure may or may not be affected. Sebrechts said long ago: "Chose remarquable et curieuse, l'action de l'alcaloïde, qui se manifeste successivement par l'abolition de la sensibilité et de la motilité, puis par l'abolition des fonctions du sympathique, est de loin la plus intense, la plus étendue et la plus prolongée sur les fibres de la sensibilité; elle est moins intense et s'exerce sur un territoire beaucoup plus restreint et beaucoup moins longtemps sur les fibres de la motilité; elle est peu étendue et d'assez courte durée sur les fibres sympathiques."

So in an ideal case, though the nerve fibres to the interossei may be paralysed, the blood pressure may still be normal. A case done recently showed this very well. The interossei were very weak but the systolic blood pressure, 135 before the anaesthetic, ranged from 125 to 135 mm. Hg throughout. The patient, who had been unable to swallow for the last eighteen months, ate some sandwiches the same evening and a mutton chop the next day. It is, of course, too soon to say if the change will be permanent. For megacolon it would be impossible to give exact details, as there is a great variation in the age and size of patients. The youngest I have done was 6 months, and this patient received 0.3 c.cm. of the decicaine solution diluted with cerebrospinal fluid to 0.7 c.cm.—I am, etc.,

Manchester, Jan. 25. E. FALKNER HILL.

Prevention of Anxiety

SIR,—Dr. R. G. Gordon (*Journal*, January 27, p. 120) defines the emotion of fear as a sensory pattern in the cerebral cortex. May I suggest a vascular subcortical pattern as an alternative.

Central nervous system activities are always instantaneous; even central excitatory states (biochemical residua) and internuncial bombardments (Lorente de Nó) are too evanescent for correlation with an enduring mental state (anxiety). Mental states may be regarded as patterns of synaptic control (*Journal*, February 5, 1938). It can be proved that both motor and sensory effects depend upon an optimal blood flow, and in this sense the latter controls synaptic transmission. A mosaic of patterns of vascular phase activity thus reflects anatomically the mental state which controls conduct.

The "set" patterns of fear behaviour, the mechanisms of origin of fear and anxiety, and the associated hormone changes put forward by Dr. Gordon are more intelligible when applied to conditioning of vascular patterns (which normally respond either to autonomic impulses or to circulating hormones, metabolites, drugs, or toxins). Moreover, a clinicopathological picture and indication for treatment are given by the pathological vascular sequelae of the influenza and concussion of this case—assuming these have altered the vascular pattern towards that which characterizes anxiety.—I am, etc.,

Birmingham, Feb. 5. F. A. PICKWORTH.

SIR,—I hope that Dr. A. W. Hendry (*Journal*, February 10, p. 231) will pursue his studies in eugenics and thereby lay the foundations for rearing a people who will be free from anxiety neuroses. But on the most hopeful view this must take some centuries to bring about, so I would ask him in the meantime to let the medical psychologists go on with their psychology. We do know that there is a physical factor in these illnesses and that, as Dr. Hendry points out, it is often inborn. But it is not very helpful to the patient under care to point out that he really ought to have chosen his parents more carefully, that he has a bad organismal entelechy. We have not forgotten these things, though we are careful not to stress them to patients. We have to make the best of our poor material, and we often find that the bad education which these patients received can be to a large extent undone, with manifest improvement in health. It is a sad fact that much of that bad, unhelpful education has been given to the patient by doctors too exclusively obsessed with the physical aspect of disease.

What should we breed for to prevent anxiety? Human reactions were slowly built up through the ages to meet current difficulties. Escape from danger was one of the most important. This entailed speed in running away or speed and endurance in attack. The bodily reactions are definite—an outpouring of adrenaline with increased force and speed of the circulation; increased muscular power. For many years in this and other civilized countries these reactions have been useless, but they survive. Useless reactions *are* symptoms. For what kind of society is Dr. Hendry going to breed? Our particular brand could not have been foreseen as recently as the sixteenth century. Had the eugenists of that time been busy they would not have known what would be wanted.

It is, however, extraordinary how adaptable man is, and how even with an obsolete educational system he has on the whole succeeded; and I think if we turn our attention steadily to education—using that word in a wide sense—the outlook is not bad.

About fairy tales, and especially about that one which annoys Dr. Hendry so much, if survival is one of the signs of truth, as many think, it would seem that many of these stories had more truth in them than many a scientific thesis. That particular one has survived through the ages, but most of the science current at the time of its birth is dead. I assure Dr. Hendry that it was not dug out of obscurity by Freud, but that it has been alive since it was first told, perhaps because it contained so much truth. So I hope Dr. Hendry will not be too much shocked if some of us continue to tell these stories. He might be less so if he called them parables.—I am, etc.,

London, S.W.1, Feb. 10. T. A. ROSS.

Obstetric Shock

SIR,—I read with great interest your leading article in the *Journal* of January 27 (p. 134) on obstetric shock. All practical obstetricians will be in agreement with you that obstetric shock is an avoidable complication and in nearly all instances is "a reproach to the practice of midwifery." You make two comments, however, which appear to admit of further discussion and even of argument. I suggest that the "leading British obstetrician" who has expressed the view that "an important cause of shock is to be found in rough and unintelligent attempts to expel the placenta" is, if anything, understating the case. It is undoubtedly the most important cause, and is probably entirely responsible in over 90 per cent. of cases. Your hope that "such ineptitude is

rarely to be met with in hospital or private practice" does not, I fear, find fulfilment in my own experience, nor in that of many others with greater experience than myself. Far too often, in some of the best maternity hospitals and even more often in private practice, is there complete disregard of the golden rule, "Leave the third stage alone and let Nature have her way." No sooner is the child delivered than there is a rush to "control the fundus," which action, admirable when properly carried out, is too frequently construed as meaning, "Massage the uterus, and as soon as it contracts express the placenta." It would, perhaps, be a good thing if the term "express" were entirely deleted from the obstetric vocabulary, or at least restricted in its use to the specialist. Not sufficient stress is even yet laid, in teaching, on the fact that the third stage of labour takes about half an hour, rarely less and often more, and that the only justification for interference in the natural process of *expulsion* of the placenta is haemorrhage or a rising pulse rate. As you point out, retention of the placenta is not in itself an immediate source of danger, unless accompanied by bleeding (though cases do sometimes occur in which, even in the absence of haemorrhage, the pulse rate rises and shock develops—this only after several hours' retention of the placenta, however, and usually due to formation of a retroplacental haematoma).

Your second comment with which I should like to differ is in relation to manual removal of the placenta. It is true that this operation is fraught with some risk, as shown by the figures of maternal mortality and morbidity commonly associated with it. But the high rate of morbidity is not so much due to the operation itself as to the usual circumstances in which it is carried out. You suggest that "the latter risk [of shock] has not received sufficient attention from either teachers or practitioners of midwifery." In my opinion it has received too much. The student is taught that a "manual removal" is a fearsome thing, only to be employed as a last resort when all else has failed. In consequence it is inevitably postponed until the exsanguinated patient, with uterus bruised by several attempts at forcible expression of the placenta, and with an uncountable pulse rate, is near unto death. Small wonder then that she at least develops a temperature. In such awe is the procedure coming to be regarded, even by some very eminent teachers, that the student never sees a case in which the subject of a manual removal pursues a normal puerperium, and he never has an opportunity to carry out the procedure himself. The patient is always "too ill." I do not suggest for one moment that manual removal of a placenta is to be regarded lightly, nor that it should not be avoided if possible; but I do say most emphatically that, carried out at the proper time, it is not an operation characterized by very much shock, nor does infection inevitably result. Even if an infection does occur it is not usually a serious one, being a mixed bag of anaerobic streptococci, staphylococci, and *B. coli*. Though all are potentially pathogenic, any patient in reasonably good health, and whose resistance is not already impaired by shock and haemorrhage, can readily overcome this sort of infection. Many cases of properly conducted manual removal pursue a normal puerperium with, at the worst, offensive lochia. Carry out the operation early, before shock and haemorrhage have occurred, and there is little to fear. In a complicated delivery—as, for instance, a case of severe inertia, followed by a difficult forceps delivery, where post-partum loss is a likely event—it is far safer to attempt expression, under anaesthesia, as soon as the child is delivered and, failing expression, immediately to remove the placenta by hand than to wait, allow the patient to recover from the anaesthetic, and then to have to deal with a post-partum loss, ending probably in a second induction of anaesthesia in order to remove the retained placenta.

Perhaps I may be permitted to quote the words of a friend for whose obstetric judgment I have the greatest respect: "No one should be allowed to practise obstetrics if he is not capable of a manual removal of the placenta." If this advice was followed we should have less of the type of case in which a pallid half-conscious woman is hurried from the ambulance into hospital, after several hours of struggle ("she has lost a fair amount and I have made several unsuccessful attempts to *express* the placenta, which appears to be adherent"), to have a transfusion and lie at death's door for weeks—incidentally, often *expelling* the placenta herself after a few hours' rest and recovery from her "obstetric shock."—I am, etc.,

Gilsland Emergency Maternity Hospital, Jan. 30. LINTON SNAITH, M.S., F.R.C.S., M.R.C.O.G.

Tuberculous Laryngitis

SIR,—In the conclusion of the joint article on laryngeal tuberculosis by Mr. Scott Stevenson and Dr. Heaf it is stated that the incidence of this condition is diminishing. My reading of the literature on this subject leads me to believe that the incidence has reached a low ebb and that it has been stationary since 1928, when A. E. Looper and L. V. Schneider in the *Journal of the American Medical Association* first gave the incidence as 15 per cent. As artificial pneumothorax was not in use at Midhurst Sanatorium when Sir StClair Thomson made his reviews of the condition it is probable that the reduced incidence is chiefly due to the introduction of this form of therapy in pulmonary tuberculosis.

It seems to me that there can be no further reduction in the incidence until an answer is found to the question, Why do some cases of pulmonary tuberculosis develop a laryngeal complication while others go free? In other words the determining causes of localization in the larynx must be found. As laryngeal tuberculosis is not the exclusive property of the pulmonary group Biii, it is therefore likely that local factors play a part in the development of that complication. My feeling is that the nutritional state of the epithelium plays a part in exposing it to infection and subsequent tissue destruction. Since this is controlled largely by vitamin A, attention to this factor may lead to a further reduction in the incidence of the disease. In work as yet unpublished I have found that cases of laryngeal tuberculosis have a greater deficiency of vitamin A than have uncomplicated cases of pulmonary tuberculosis. I mention this now as the authors of the article may find it of interest, and with the facilities at their disposal they may wish to confirm my findings or possibly observe the prophylactic effects of vitamin A.—I am, etc.,

Middlesbrough, Feb. 7. DONALD CAMPBELL, M.B.

Enuresis

SIR,—Dr. Doris Odlum in her letter, (*Journal*, January 27, p. 151) asks me what there is special about my method of applying suggestion which makes it work in the treatment of nocturnal enuresis. The answer is that there is nothing special about it at all. It follows the rules laid down for the successful application of suggestion in general. These are common knowledge among psychotherapists and I need not repeat them, but I would like to draw special attention to one or two of them with particular reference to the matter under discussion.

First, the operator, whom I will call the individual applying the suggestion, must have a clear idea of what he is treating. I am afraid that Dr. Odlum, both in her article and in her letter, has given me the impression that she makes no distinction between children who wet their beds who at the time of the act are awake, asleep, naughty, careless, afraid to go to the water-closet in the dark, or are merely unaware that they have begun to urinate until they feel the trickle of urine. No one, I hope, would begin to treat cases of bed-wetting without first separating the sheep, who need psychotherapy, from the goats, who need a spanking. I must confess that I am no believer in sparing the rod. The problem of nocturnal enuresis in the otherwise normal child is, I think it will generally be agreed, that of micturition during sleep. Secondly, the suggestion should be given confidently. For this the operater must believe that what he suggests is reasonable and possible of achievement. If he believes that diuresis, rapid filling of the bladder, local irritation, enlarged tonsils and adenoids, a too comfortable bed, and a host of other things can make an otherwise normal child wet his bed

during sleep, what confidence can he have in suggestion as a blunderbuss remedy? I must admit that I do not believe any of these things. It must be a common experience that if one wakens with a desire to micturate, even as a result of one of these causes, micturition can be delayed for quite long periods if, assisted by a really warm comfortable bed, one can fall asleep again; in other words, sleep in the average individual keeps the sphincter closed. If the bladder becomes distended it may awaken the sleeper merely as a hint to him to empty it if he chooses. This is the state, surely, that one wants to produce in the enuretic. Then he may learn by experience that if he has tea at night he may have to get up in the night to micturate, although I venture to express the opinion that, if none tells him of the possibility of this, it is not likely to happen. Thirdly, counter-suggestion of all forms should be excluded. In the category of counter-suggestion I include evening curtailment of fluids, the chamber beside the bed, getting the child up after he has fallen asleep, and a number of other traditional items of treatment. It is obviously useless to tell a child that he is just like other children if at the same time we tell his mother to treat him as if he were not. I do not think that tea is a good thing to give a child before going to bed, but I think it is a bad thing to bring him up with the belief that it will make him wet his bed. The psychological cause of the enuresis also acts as counter-suggestion, and should be treated by simple explanation of it to the child.

Dr. Odlum invites me to give in detail exactly what I do and say to the child. This depends on a number of circumstances, including the age, sex, and temperament of the patient, and varies in its directness or subtlety with these circumstances. There are no set magic words, I am sorry to say, which apply to all cases. To accede to her request would involve describing individual cases which the limits of a letter would not allow.

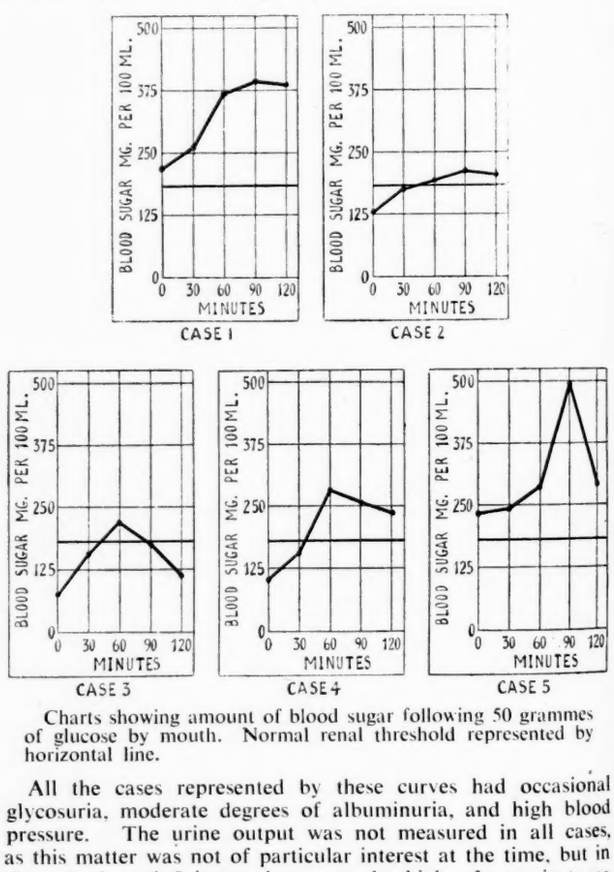
With regard to enuretics—and I must repeat that I mean involuntary bed-wetters—making their own beds, I am not at all converted by Dr. Odlum's statement: "My proposal that all children should help to make their own beds is intended to avoid discrimination between the enuretic and his more fortunate fellows." The fact is that so few children help to make their own beds that to make the enuretic do so is a form of discrimination to be deplored. Whatever Dr. Odlum may think about the advisability of making bed-making a routine practice for children, it does not prevent her argument recoiling on herself. I do not think her argument about the development of a reality sense holds water. Must the child who vomits through illness, over-eating, disgust, or naughtiness be made to wipe up the mess whatever the cause? Similarly, must the boy who dirties his trousers through enteritis, fright, naughtiness, or some psychological cause be similarly treated? The acts are all the same, as Dr. Odlum says, whatever their motive or justification, and so I suppose she would decree that they should not escape their consequences lest they fail to develop the reality sense. (One of the most attractive features of children is their creative sense of make-believe. The matter-of-fact modern child who never believed in Santa Claus nor reads fairy tales is a blot on the fair, innocent, happy landscape of childhood, from which the overwhelming majority of children graduate to the reality of adult life all too soon.) As to diurnal enuretics, I have had to treat children over 5 years of age who frequently wet from psychological causes, although they were not aware of micturition until they felt urine trickling down their legs. I think in this connexion that it is again most important that those who treat children should pay attention to the interrogation of their patients in a confidential manner, realizing that the child has a tale to tell which is often not forthcoming on account of the interruptions, prompting, or even presence of the adults who have brought them for advice.

Above all things, the secret of success in treating children for enuresis, or indeed any complaint of a psychological nature, is first to gain their confidence by treating them as the central figures in the case. The wet bed, the complaining mother, the problem of enuresis in evacuees, should be far from the minds of both doctor and patient when the latter, already smiling and confident in contrast to his previous downcast air, is ready to receive the suggestion that he is just like other boys, that he is going to give up his enuresis, and that his mother is going to bring him back at the end of a week so that I can make a record of his recovery. The mother thinks it is magic, but the child only knows that at last he has found an adult who has not altogether forgotten the make-believe problems of childhood and their accompanying cravings to be understood.—I am, etc.,

Leek, Feb. 1. J. H. MALLOY, M.D., D.P.M.

Diabetes and Renal Disease

SIR,—I have previously refrained from entering the discussion on the renal threshold in diabetes mellitus raised by Dr. K. E. Barlow's article (*Journal*, October 14, 1939, p. 765), since Drs. R. D. Lawrence and W. G. Oakley (November 4, 1939, p. 929) and Dr. J. P. Bose (January 6, p. 35) have already refuted his statements and there is much experimental evidence against his results. As Dr. Barlow asks (January 27, p. 151) for further results, I give some previously unpublished glucose-tolerance curves obtained from a series of cases investigated about four years ago (see Figs.). These are only examples; others could be given. No originality is claimed for these results, since this effect, as has been so clearly stated by your previous correspondents, is widely recognized. (See Joslin, *Treatment of Diabetes*, New York, 1928; Rabinowitch, *Brit. J. exp. Path.*, 1926, **7**, 352.)



Charts showing amount of blood sugar following 50 grammes of glucose by mouth. Normal renal threshold represented by horizontal line.

All the cases represented by these curves had occasional glycosuria, moderate degrees of albuminuria, and high blood pressure. The urine output was not measured in all cases, as this matter was not of particular interest at the time, but in Cases 1, 3, and 5 it was known to be high. In no instance during these tolerance tests was there glycosuria, except in Case 5, when the urine at two hours contained 0.35 per cent. glucose. A normal renal threshold may occur in nephrosclerosis, but I have never known the renal threshold to be lowered. This does not imply that renal glycosuria cannot occur in nephrosclerosis; of the many cases of renal glycosuria I have seen the vast majority were in young adults, and none happens to have had nephrosclerosis.

There seems no justification for supposing, as Dr. Barlow does, that a kidney which has difficulty in concentrating

should have a lowered renal threshold; his two cases cannot be taken as evidence for this against all the contrary evidence.

The difficulties in treating such a patient as Case 1 can well be imagined, since glycosuria gives no guide to the control of the diabetes. Though such a patient has no glycosuria the disease may be very poorly controlled, and he is therefore still liable to all the complications and sequelae of both diabetes and nephrosclerosis. The diabetic with nephrosclerosis is in a much worse case than a patient with uncomplicated diabetes.—I am, etc.,

Victoria Infirmary, Glasgow, Jan. 29. JAMES C. EATON.

The Supposedly Sterile Syringe

SIR,—Dr. R. D. Lawrence (January 27, p. 150) cannot surely attribute his good fortune in freedom from sepsis to the 95 per cent. alcohol used for "sterilizing" his insulin syringes, as our observations and those of others reported in the *Journal* of January 20 (pp. 79 and 96) clearly prove the inefficacy of alcohol as a disinfectant. The action of the tricresol, which he points out is present in the insulin solution, must be given some credit. Ordinary insulin solution is acid (*p*H 3), and it is well known that the bactericidal activity of most antiseptics, including tricresol, is enhanced by a low *p*H. The same bactericidal effect is not exerted, however, by protamine-zinc-insulin solution with a *p*H which is nearly neutral, and thus with this preparation the precautions regarding inoculation technique which we have described in our paper are all the more important.

Many practitioners may have employed alcohol or ether for "sterilizing" syringes or needles without getting a case of obvious sepsis. Nevertheless, a doctor defending a claim for damages on account of an infection so contracted would be open to attack, for the low bactericidal activity of alcohol and ether is well recognized by bacteriologists, and there are already on record a number of instances in which serious ill effects and even deaths have resulted from a misplaced reliance on alcohol as a disinfectant (*British Medical Journal*, 1938, **1**, 955). We believe that, apart from reported cases of infection, there may be many others which are overlooked. Thus, some of the reactions which follow the injection of sera, vaccines, and other prophylactics, etc., are probably minor grades of sepsis and not merely the response of the tissues to foreign protein. The human subject has a varying immunity to infection, the degree of which may be modified by the general health of the patient, by the virulence and dose of the infecting organism, and by the trauma caused at the time of inoculation producing death of tissue and thus providing a suitable nidus in which organisms introduced with the inoculum may flourish. Indeed, it is this general immunity which allows us so often to use an imperfect sterilizing technique with impunity. The risk, however, remains, and it is not in the best interests of the patient to gamble with it.

We have been unable to confirm Dr. N. Pines's statement (February 3, p. 191) that the addition of a small amount of thymol (1 in 1,000) to methylated spirit will kill *instantly* (italics ours) any of the germs or spores that are resistant to alcohol. In one series of experiments nine syringes were intentionally infected with a weak suspension of aerobic and anaerobic organisms and their spores, and were then treated with a solution of 1 in 1,000 thymol in methylated spirit for varying periods up to half an hour. After this treatment, bacteriological examination of all the syringes showed that viable organisms or their spores were still present. In a second series of experiments various sporing organisms, including pathogenic anaerobes, grew readily from a number of samples of an alcoholic solution of thymol infected one week previously.

If all hospital autoclaves were under expert bacteriological control one would hear less about imperfect sterilization of dressings, towels, gloves, etc., to which Dr. A. Raff refers (February 3, p. 191). His use of a fresh sharp needle for each injection is commendable, as less damage to the tissues is produced, though where large numbers of injections have to be given cost might have to be considered. We cannot take seriously his final suggestion that ultra-violet rays would be suitable for the sterilization of syringes for mass inoculations. The penetrating power of the rays for glass and for proteins is very low, so that they would be largely filtered off; their action is mainly on the surface of the body which they irradiate. The use of heat is obviously more practicable and effective.—We are, etc.,

JOSEPH W. BIGGER,
J. W. S. BLACKLOCK,
H. J. PARISH.

February 12.

Obituary

F. W. W. GRIFFIN, M.A., M.D.

Formerly Subeditor of the *British Medical Journal*

We record with sorrow the death on February 8 of Dr. F. W. W. Griffin, who was a member of the indoor editorial staff of the *British Medical Journal* from 1923 to 1930, and did part-time work in the office for some years afterwards, until failing health and strength made him no more than an occasional contributor.

Frederic William Waudby Griffin was born on September 25, 1881, at Weymouth, where his father practised medicine. From Weymouth College he went up to King's College, Cambridge, in 1900, and took his B.A. in the Natural Sciences Tripos of 1903. Continuing medical study at St. Bartholomew's Hospital, he took the English Conjoint diplomas in 1907 and graduated M.A., M.B., B.Ch. at Cambridge a year later. After resident posts at the Royal Sea Bathing Hospital, Margate, and Queen Mary's Hospital, Carshalton, he became tuberculosis officer for the County of Surrey and for the Borough of Fulham, and proceeded to the M.D. degree in 1914. He served during the last war with a temporary commission in the R.A.M.C., mainly in France at No. 14 Stationary Hospital, Wimereux, where a large amount of bacteriological and serological work was done on cases of typhoid, paratyphoid, and other infectious fevers. For several years after the war Dr. Griffin was assistant pathologist in the research laboratories of a commercial firm, and devoted all his leisure to the Boy Scout movement, in which he reached a high position.

In 1923 he joined the staff of the *British Medical Journal* as subeditor, and thenceforward gave of his best to our work. A man of single-minded outlook with a high sense of duty, he was loyal to every institution that claimed his allegiance and proved himself a most willing and sympathetic colleague. He was not a born journalist and never professed to have attained expert skill in the craft, but all that could be done by hard work and devotion he did. For some time after resigning the indoor post here he continued in charge of our weekly *Epitome of Current Medical Literature*, and on more than one occasion came back to help in the editorial department when the *Journal* was beset by stormy seas. His friendly and self-effacing comradeship in times good or bad is remembered with gratitude.

Dr. Griffin had edited *The Scouter* for the Boy Scouts Association, and in recent years was editor of the *Journal of the Chartered Society of Massage and Medical Gymnastics* and medical adviser to the Lucas Tooth Boys' Training Fund. He published three books: *Aids to Practical Pathology* in 1923; *Health and Muscular Habits* jointly with Lieutenant-Colonel J. K. McConnel in 1937; and soon afterwards *The Scientific Basis of Physical Education*, which was a serious attempt to summarize the

present state of medical and scientific knowledge in regard to the bodily effects of muscular activity. The underlying aim of both of the books on physical culture was to promote the health of the people by cultivating balance of body and correcting bad habits of posture. They provided useful ammunition in the campaign which had been opened by the British Medical Association when it set up its Committee on Physical Education, whose report appeared in 1936. For the past six years Dr. Griffin acted as honorary secretary of the Chelsea and Fulham Division of the Association, which he joined immediately after graduating in medicine. He looked on membership of the B.M.A. as a duty and a privilege and was very proud of his connexion with the *B.M.J.*

A fellow-student and former colleague writes: In forty years' acquaintance with him—at one time very close indeed—I never heard F. W. W. G. say an unkind word or saw him play for his own hand in any situation of life. He was a good man, patient, loyal, and unobtrusively helpful, with that "understanding of the heart" which expresses itself in friendly acts of service, shyly offered, rather than in affectionate phrases. Though he had many other interests the thing that meant most to him, I believe, was the Boy Scout organization and the ideals that inform and move it. This seemed to be the most real part of his life, and no matter how strenuously he spent himself elsewhere upon the cares and duties of the day his heart was in "scouting" all the time. The last few years were spoilt by ill-health and failing powers, but before the first breakdown Griffin had a great capacity for routine work, constant good humour, and boundless belief in the value of our joint labour. The two mottoes he tried to live up to, day in and day out, were that of the Corps in which he served during the last war and the line and a half from Horace which used to head every issue of the *St. Bartholomew's Hospital Journal*: each contains the key words "in arduis."

Barbados has lost a much-loved personality through the death of Dr. EDWARD HOWARD BANNISTER. The son of a landed proprietor on the island, he was born in 1860 and studied medicine at the University of Edinburgh, graduating M.B., C.M. in 1884. He then returned home to take up private practice, and as the years passed he was appointed to a number of official posts, including that of visiting surgeon to the General Hospital. From 1917 to 1935, when he resigned all his official appointments, he served as police medical officer. Dr. Bannister joined the British Medical Association in 1889; he represented the Barbados Branch at the Annual Meetings of 1920 (Cambridge) and 1927 (Edinburgh), and was vice-president of his Branch in 1935–6.

Dr. THOMAS CATHCART TAYLOR of Brookeborough, Co. Fermanagh, Northern Ireland, died at the age of 86 at his son's home in Glasgow on January 10. He had been in general practice in the Brookeborough Dispensary District for over fifty-seven years, and it was only a year ago that failing physical health forced him to retire. "H. O. C." writes: Dr. Taylor's mental faculties, always of the highest order, remained practically unimpaired to within a week of his death. A remarkable man of another generation has thus departed. Beneath a certain abruptness in manner and speech there were grand qualities of mind and heart. As a physician he was deservedly in high repute throughout his district, for his judgment was extremely sound and commonsense, and to the very last he kept himself conversant with modern developments in medicine. He was an assiduous reader of the *British Medical Journal*, and he must have been one of the oldest members of the Association. But his interests covered a much wider field than medicine. He was a philosopher—indeed almost a fatalist—of a very practical and self-sufficient type, and widely read on many matters of general interest—economics, politics, geography, ethnology, farming, biology, etc. He was a keen horseman, and one of the most familiar sights of the countryside some years ago was to see him on his rounds riding across country on a fine animal always trained by himself. His chief hobby was wood-carving. Every piece of furniture in his own house had been made by himself—sawn, carved, erected, and french-polished with the most perfect artistry and with the finished skill and touch of the expert cabinet-maker. Respected both as a doctor and a man by all who knew him, he will long be remembered and sadly missed in the area where he lived and practised for the greater part of a lifetime.

"R. T." writes: The early and untimely death of Dr. J. WALLACE ANDERSON has removed a very much liked and distinguished figure from the medical life of Glasgow. Wallace Anderson was a man of very strong personality, the outstanding characteristics of which were an abounding energy and a never-failing cheerfulness. It was always a tonic to meet Wallace, either in the course of professional consultation or at play. He was so full of the joy of life and so active and energetic in the pursuit of his duties. There are many who will miss him in the city of Glasgow, not only because of his professional ability but for his great social qualities, for he had widespread interests in music, in art, and, above all, in the fellowship of his numerous friends. He took his pleasures in the pleasant places of Wigtownshire, and there are very many there who will miss him sorely. Wigtownshire was really his "calf county," and it was an inspiration to experience his enthusiasm for Galloway and all that it meant. He had no family, but he and his wife had the love and affection of many children in these holiday haunts. These little ones will miss him badly. The loss of this happy, good-hearted fellow leaves a blank which will be impossible to fill. That blank is greatest for his widow, who shared his activities so fully and who is assured of the deep sympathy of a multitude of friends in Glasgow and in Galloway.

As briefly recorded in the *Journal* of January 27, DR. THOMAS CAMERON, one of the oldest and most respected surgeons of the City of Hull, died in Gibraltar on January 8. A colleague sends the following further particulars: He was educated at Inverary Academy and from there proceeded to Glasgow University, where he took his degrees of M.B. and C.M. in 1887. He came to Hull in the year 1893 and in 1895 was appointed assistant surgeon at the Women's Hospital. Here he displayed a wonderful gift in surgery, because at that period there was not the same education in surgical practice as there is to-day. In 1908 he was appointed full surgeon on the death of Dr. John Close, and the work of the hospital became so enlarged that it was transferred to a new site on the Cottingham Road. There is no doubt that the hospital there will be a living tribute to Cameron's work, for the arduous labours which he exerted in the old home in Wright Street made it incumbent that a newer and more up-to-date hospital should be erected. Dr. Cameron had been chairman of the local division of the British Medical Association as well as of the Hull Medical Society. He retired from practice in Hull and went to Gerrards Cross, but after a few years there he decided that complete retirement should be his lot. This only lasted for a short time, however, for Cameron was a man of great energy and decided to take a trip to the East as a ship surgeon. It was on his return from there that he took ill and died after a few days in hospital. In his young days he played in the fifteen at Glasgow University. He was fond of boxing and was noted as a very fine fisherman and a good shot. He was a kind, loving man and never scrupled to do an operation for any of the necessitous poor, without fee or reward, at any time. Although he had left the City of Hull for some time, his good work and his kindly advice to young practitioners will live after him.

DR. JOSEPH BUCK of Woodlesford, who died on January 23, had been in practice in the Leeds district for more than forty years. He was born at Whitby in March, 1863, and at the age of 16 was apprenticed for five years to a surgeon and apothecary of that town. He then went to Leeds as unqualified assistant to a practitioner there and attended the Leeds

Medical School, and in 1888 qualified as L.R.C.P. and S. of Edinburgh and L.R.F.P.S. after a further course of study at the Glasgow Royal Infirmary. He became medical officer of health for the Hunslet Rural Council in 1892, and practised in Rothwell. He obtained the M.D. degree of Durham University in 1907 and the D.P.H. in 1910. Dr. Buck had been a member of the British Medical Association for over half a century and was a past-president of the Yorkshire Branch of the Society of Medical Officers of Health.

Mr. ALBERT SAMUEL WORTON, ophthalmic surgeon to the Princess Beatrice Hospital, Earl's Court, and to other institutions, died on January 31 after an operation. He was born in Glasgow in 1874, and from the High School went to study medicine at the University, graduating M.B., C.M. in 1895, M.D. in 1906, and taking the F.R.C.S.Eng. in 1909. His early appointments were those of assistant dispensary surgeon to the Royal Sick Children's Hospital, Glasgow, and house-surgeon to the Eye and Ear Infirmary, Liverpool. He then came to London and became chief clinical assistant to the Royal London Ophthalmic Hospital and ophthalmic surgeon to the Kensington and Fulham Hospital. During the last war he was ophthalmic surgeon to the City of London Red Cross Hospital and the Prince of Wales's Hospital, and oculist to the White City Medical Board. Mr. Worton joined the British Medical Association in 1903, and contributed a number of papers on ophthalmological subjects to the *British Medical Journal*, the *Ophthalmoscope*, and other periodicals.

Universities and Colleges

UNIVERSITY OF OXFORD

An extra examination, in all first B.M. subjects, will be held between March 11 and 19. An extra examination, in general pathology and bacteriology (new regulations) and in pathology (old regulations), will be held between April 1 and 5. There will be no extra examination in any other subject of the second B.M. course.

UNIVERSITY OF CAMBRIDGE

The Raymond Horton-Smith Prize for 1938–9, awarded to the candidate who presents the best thesis for the degree of doctor of medicine during the academical year, has been awarded to L. Foulds, M.A., M.D. *Proxime Accessit*—G. D. Hadley, M.A., M.D.

At a Congregation held on February 2 the following medical degrees were conferred:

M.B., B.CHIR.—*G. D. Graham, *A. C. C. Hughes, *R. Wilson, T. B. Hutton.

* By proxy.

Trinity College has established a studentship for the study of psychical research out of a bequest by Mr. F. D. Perrott as a memorial to F. W. H. Myers. The electors to the Perrott Studentship are prepared to receive applications from candidates. Psychical research is defined, for this purpose, as "the investigation of mental or physical phenomena which seem *prima facie* to suggest (*a*) the existence of supernormal powers of cognition or action in human beings in their present life, or (*b*) the persistence of the human mind after bodily death." The studentship (tenable for one year) is open to any person who shall have completed his or her twenty-first year at the time of election. A student may be re-elected once, but not more than once. The studentship will be of such value, not exceeding £300, as the electors may award after considering the nature of the research the candidate proposes to undertake. Applications should be sent to Professor C. D. Broad, Trinity College, Cambridge, before May 6, 1940; candidates should state their qualifications and claims, and the proposed course of research: they may also submit any work they have written, published or unpublished. No testimonials are required from graduates of Cambridge University or women students on whom a title of a degree has been conferred by that University; others must submit the names of three referees.

At Corpus Christi College J. C. Sloper (Sherborne School) has been elected to a Smyth Exhibition for medical students.

UNIVERSITY OF LEEDS

Moynihan Lectureship

The Faculty of Medicine has decided that the lectureship endowed by the late Lord Moynihan shall be held biennially. It is hoped that the first lecture will be delivered in October, and Mr. Gordon Gordon-Taylor, F.R.C.S., senior surgeon to the Middlesex Hospital, has accepted the invitation of the Faculty to be the lecturer.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Supplementary List of Licentiates

In addition to the 150 candidates whose names appeared in our issue of February 3 (p. 195), licences to practise physic have been granted to the following fifty-seven candidates (including ten women) who have passed the Final Examinations of the Conjoint Board and have complied with the necessary by-laws:

P. T. Anderson, G. W. S. Andrews, J. A. Atwill, G. E. Badman, F. D. Beddard, Margaret Bennett, Helen Blumenfeld, Winifrid M. Bond, J. G. Brown, J. K. Chisholm, R. B. Clayton, F. B. Cockett, G. G. Cooley, J. Crabb, L. A. Cruttenden, R. B. J. Cuddon-Large, F. Ll. Davies, H. V. Dholakia, D. M. Douglas, M. Gold, P. Harvey, B. M. Heap, R. A. Henson, D. G. Howell, D. B. Irwin, E. Jones, H. Kalmanoff, I. Klass, J. M. Knight, G. T. Lavery, A. B. Lennie, G. Ll. Lewis, C. Lewthwaite, Jean D. McKendrick, Margaret E. McKendrick, G. A. Matthews, R. M. Mayon-White, C. F. Miller, P. L. F. Mortimer, J. F. Mullan, E. D. V. Nicoll, D. Nixon, Mary P. Parish, J. L. Pinniger, Minnie Pomerance, Ella Schwartzman, L. B. Scott, J. C. Scott-Baker, K. C. W. Shawcross, Evelyn H. Singer, J. L. S. Smith, M. Steel, J. Tarlo, F. S. D. Thompson, Marguerite Watts, F. A. Whitlock, A. Zinovieff.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A meeting of the Council was held on February 8 with the President, Mr. Hugh Lett, in the chair.

The Hallett Prize, awarded on the result of the Primary Examination for the Fellowship, was presented to Mr. James Grayton Brown, M.S., of the University of Melbourne.

A letter was read from the Secretary of State for War expressing his warm appreciation of the work done by the College in connexion with the Army Blood Transfusion Service and for providing a reference library for the Medical Base in France.

The following lectures and demonstrations were announced:

Moynihan Memorial Lecture by Professor Ernest W. Hey Groves on March 14 at 4 p.m.; Robert Jones Memorial Lecture by Mr. T. P. McMurray; three lectures in physiology —"The Circulation in Shock" by Professor R. J. S. McDowall on May 2, at 4 p.m., "Pain" by Professor E. D. Adrian on May 9, at 4 p.m., and "Experimental Spinal Analgesia" by Professor A. D. MacDonald on May 16, at 4 p.m.; and six demonstrations in pathology by Mr. Gwynne Williams to be given in April.

Diplomas

Diplomas of Membership were granted to the 150 candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London in the *Journal* of February 3 (p. 195), and to the fifty-seven candidates whose names are published above.

Diplomas in Public Health and in Medical Radiology were granted jointly with the Royal College of Physicians of London to the candidates whose names were published in the report of the meeting of the Royal College of Physicians of London in the *Journal* of February 3 (p. 195).

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the College, held on February 6, with the President, Dr. Alexander Goodall, in the chair, Dr. T. A. H. Munro (Colchester) and Dr. H. W. Dryerre (Lasswade, Midlothian) were introduced and took their seats as Fellows of the College. Dr. P. C. Davie (New Zealand), Dr. P. K. Bardhan (Calcutta), Dr. C. G. Magee (London), Professor F. A. E. Crew (Edinburgh), Dr. F. Riggall (Arkansas, U.S.A.), Dr. A. J. Wilson (Coventry), and Dr. J. L. Henderson (Edinburgh) were elected Fellows of the College.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on February 5, with Dr. J. Souttar McKendrick, President, in the chair, Sanguan Rojanavongse, M.D., Bangkok, was admitted a Fellow of Faculty.

Medical Notes in Parliament

This week the House of Commons debated the agreement between the Government and the railways, and the proclamation of a state of emergency in India. A statement was expected from Dr. Elliot about new proposals for the evacuation of children from vulnerable areas in 1940.

Detention of Mental Defectives in Scotland

In the House of Lords on February 6 the Marquess of ZETLAND moved the second reading of the Mental Deficiency (Scotland) Bill. He explained that in Scotland a mental defective could be detained by a judicial order or at the instance of a parent, a guardian, or a local authority with the consent of the parent or guardian. The order was for one year. If the General Board of Control was of opinion that the detention should continue, it was under an obligation to intimate to the defective and to the parent, guardian, or other persons concerned the intention to extend the order. There was a right of appeal to the Courts within fourteen days of the intimation. A case was taken in the Courts which was known as Innes, or Page, against the General Board of Control. In that case the Court of Session decided that if the intimation had been sent but had not reached the person concerned the original order must be deemed to have lapsed and the defective must be released. By this amending Bill the General Board of Control, if convinced that continued detention of a case was desirable, would be entitled to extend the order. It would not, under the amended law, be necessary for intimation of that to be received. On the other hand, a right of appeal by the person concerned would be granted to the Sheriff at any time and not limited to fifteen days, but appeals must not be more frequent than once in two years. The Bill would validate existing orders while allowing an immediate appeal to the Sheriff.

The Bill was then read a second time.

Protection of Practices Scheme

In answer to Mr. Groves, on February 6, Dr. ELLIOT said that schemes for the protection of the insurance practices of practitioners on war service usually provided for the payment to the absentee practitioner of half the fees payable in respect of the insured persons on his list, and the distribution of the remaining half among the practitioners accepting responsibility for the treatment of his patients during his absence. It was to be expected that the fees received per accepted patient would be high during the early part of the period when the names of many insured persons who were entitled to treatment had not been placed on any temporary list. The local bodies responsible for these schemes could be relied upon to promote any revision which experience dictated. The schemes for the protection of practices usually made provision for the temporary acceptance of all insured persons accepted by practitioners during the period of emergency, though the system of temporary acceptance was limited in some schemes to the patients of absentee practitioners. Where a scheme was on a voluntary basis participating practitioners mutually agreed to accept insured persons only as temporary patients during the period. Where a scheme was formally adopted the authority for it was derived from the National Health Insurance (Medical Benefit) Regulations.

Resumption of Social Services in Evacuation Areas

The Archbishop of CANTERBURY opened a debate in the House of Lords on February 7 on education, with particular reference to the problems caused by the evacuation of children. He said about 1,000,000 children had been left in the evacuation areas or had returned. Over 400,000 children had no schooling between September and January, lost the benefit of the medical services, and in many places also lost the free meals and the supply of free or cheap fresh milk. For educational, moral, and physical reasons schools should be reopened in vulnerable areas.

Lord ADDISON said fifty-five inspectors of the Board of Education had gone to other duties. The health and medical services seemed almost to have been dissipated. The discovery that a large number of children, when they reached the reception areas, were not clean meant that school inspection, school medical services, and nursing services required to be augmented, not scattered to the winds. Consumption of cheap milk in schools had declined by rather more than half because there had been no drive behind the maintenance of the service. Lord CRANWELL spoke of children who formerly received free milk in the town but no longer needed it after being a month or two in the country. This had been noticed by doctors who came down with them.

Earl DE LA WARR said some of the inspectors who left the Board of Education had already returned. The time had come for seeing that every child went to school somewhere. The moment the children could be accommodated attendance would be enforced. Before Christmas the authorities were told to resume all their health services. Dr. Elliot put at their disposal all the staff and buildings of the first-aid posts to ensure that all children would be examined by the end of March. That concentration of effort had never been known before in the school medical services. Local authorities should press on with this work even more rapidly than with getting the children back to formal schooling. He emphasized the importance of school meals and milk. Consumption of milk in schools showed a welcome increase. He told the education authorities that if permanent damage was not to be done to the children the work must be carried through at the earliest moment.

The decision to restore compulsory education was also announced by Mr. Kenneth Lindsay in the House of Commons.

R.A.M.C. Officers

Mr. VERNON BARTLETT asked the Secretary for War on February 6 why civilian medical practitioners of long experience and with no practices of their own were dismissed; and whether the newly commissioned officers who took their place all received an intensive course of training at the Royal Army Medical College, Millbank. Sir VICTOR WARRENDER answered that the great expansion of the Army necessitated the appointment of a large number of additional Royal Army Medical Corps officers available for service wherever required. These in certain cases replaced civilian medical practitioners previously employed for local duties only. It was open to civil medical practitioners of suitable age and fitness to apply for commissions if willing to undertake the liability for general service. Newly commissioned officers were trained at various Army medical establishments, including the Royal Army Medical College, Millbank.

Tuberculosis in Wales

Dr. ELLIOT told Mr. Jenkins on February 8 that some 225 patients awaited admission to residential institutions of the Welsh National Memorial Association. In addition about 500 patients who were discharged or took their own discharge from the association's institutions on account of the emergency had not returned for the purpose of completing treatment. An estimate approximating to 3,000 as a potential number of cases of tuberculosis in Wales which ought to be under residential treatment was mentioned in the Report of the Committee of Inquiry into the Anti-tuberculosis Service in Wales, but had no necessary relation to the effective demand for beds. He had put in hand the construction of addition hospital accommodation in hutments at Denbigh and Chepstow. These hutted hospitals would comprise 960 beds, and would be completed this year. He hoped the 360 beds at Denbigh would be available for the treatment of tuberculous patients from April. Where evacuees suffering from tuberculosis were given institutional treatment by the Welsh Memorial Association the cost of such treatment would fall upon the authorities in whose areas the patients ordinarily

resided in cases in which mutually agreed arrangements to that effect existed between those authorities and the Welsh National Memorial Association. In other cases the cost would fall to be borne by the Welsh National Memorial Association, subject to the provision that the approved net additional cost incurred by the Association in respect of persons evacuated under the Government scheme would be met from Government funds. When members of His Majesty's Forces were found to be suffering from tuberculosis and were sent for treatment to institutions under the control of the Welsh National Memorial Association, payment would be made accordingly.

Consultant Advisers of the E.M.S.

In a reply on February 8 to Sir Ernest Graham-Little, Dr. ELLIOT said that since the names of the consultant advisers in the Emergency Medical Service, numbering in England and Wales thirteen, were published in a White Paper (Cmd. 6061) presented to Parliament in July, Lord Dawson had been added. Seven of these advisers were on a whole-time basis, which debarred them from private practice. In the case of any of them who had already occupied paid posts elsewhere before their appointment any necessary adjustment was a matter between them and the employing authority. The remainder were on a part-time basis at proportionate salaries. The appointments would normally continue for the duration of the war.

Welsh Board of Health

Dr. ELLIOT told Mr. John on February 8 that the powers of the Welsh Board of Health were to be increased. He intended in future to exercise and perform through the Welsh Board of Health all the principal powers and duties of the Minister of Health in relation to Wales, subject to central direction of broad policy. Steps to that end would be taken as soon as administratively possible. The new Board, combining both wide administrative experience in the special problems with which Wales is faced and knowledge of and sympathy with Welsh language and culture, would be in a position to tackle these problems with vigour, and with the good will and co-operation of all members of the House and also of the people of Wales.

Fee for Treatment of Air Raid Casualties.—Dr. Elliot has under review the sum of 16s., agreed upon by him for the treatment of air raid casualties, and is prepared to consider an appropriate addition to the fee if it appears in the light of experience that an abnormal amount of travelling is required in certain areas.

Treatment of Minor Illnesses in the Services.—On February 13, answering Mr. Tomlinson, Mr. OLIVER STANLEY said reception stations, camp hospitals, and regimental medical posts were provided in all areas of this country where troops were billeted, for the accommodation and treatment of cases of minor illnesses. The necessary provision was made in Army regulations for invalid diet to be provided for men suffering from illness but not in hospitals.

Notes in Brief

When shipwrecked men and women are landed on our coasts as the result of enemy action, any medical treatment which such persons may require is provided at the cost of the Exchequer through the Emergency Medical Service.

The percentage of evacuated school children who had returned to the L.C.C. area by January 20 was 36.8.

The instructions issued for the guidance of medical boards engaged in examining recruits for the armed forces, with regard to the estimation of nervous stability in determining a man's appropriate grading, already follow the main recommendations of the conference convened last July to consider and advise on nervous instability which may become manifest in war. Whether any further instructions are necessary is under consideration.

Particulars of milk production during January are not available, but up to the end of December production was well maintained. There has been some reduction in the demand for milk under the milk-in-schools scheme, and the milk not so required has been used for manufacturing purposes. The Board of Education has indicated that it should be practicable to provide milk for children not in attendance at school, subject to certain safeguards.

Medical News

The Royal Institute of Public Health and Hygiene has decided to award the Harben gold medal for 1940 to Sir Leonard Hill, F.R.S., and to confer the Smith award for 1940 upon Sir William Savage, late medical officer of health for the County of Somerset. The Harben gold medal is, in accordance with the terms of a trust created by the late Sir Henry Harben in 1894, awarded triennially to one, irrespective of nationality, who has, in the opinion of the council, "rendered eminent services to public health." The Smith award consists of a bronze figure of Hygeia and is awarded triennially to a medical officer of health who has, in the opinion of the council, "achieved most noteworthy work in the discharge of his duties."

The Institute of Hospital Almoners has arranged a public meeting to be held to-day (Friday, February 16) at 5 p.m., in the Westminster Palace Rooms, 44, Victoria Street, S.W.1, when Miss Florence Horsbrugh, C.B.E., M.P., will give an address.

The tenth congress of the Federation of Societies of Medical Science in North Africa will be held at Casablanca and Rabat under the presidency of Dr. Dubois Roquebert on March 22 and 23, 1940, when the subject for discussion will be diseases of the blood in North Africa. Further information can be obtained from Dr. Fournier, Boulevard du 4e Zouaves, Casablanca, Morocco.

The Home Secretary published a notice in the *London Gazette* and the *Edinburgh Gazette* on February 9, announcing his intention to make Rules amending the Poisons Rules, 1935, and an Order amending the Poisons List. Copies of the draft Rules and of the draft Order may be obtained (price 1d. each) from H.M. Stationery Office at the following addresses: York House, Kingsway, W.C.2; 120, George Street, Edinburgh, 2; 26, York Street, Manchester, 1; 1, St. Andrew's Crescent, Cardiff; or through any bookseller. Any representations in regard to the amending Rules or Order should be made in writing addressed to the Under-Secretary of State, Home Office, Whitehall, S.W.1, not later than March 19.

The Scandinavian pharmaceutical societies have opened subscription lists with the object of sending medical comforts and stores to Finland. The latest Danish figures show that about 3,500 kronen have already been subscribed in Denmark.

The "paramedical" section of *Paris Médical* for January 6 to 13, which is devoted to dermatology, contains an interesting note on "Medicine in the Works of Somerset Maugham" by J. Godal.

At the annual public meeting of the Paris Academy of Science held last December Montyon prizes of 2,500 francs were awarded to Professor Lucien Dautrebande of Liége for his researches during the past twenty years on the toxicology of different vapours used in industry, and to Professor Coulouma and Dr. Léon Devos of Lille for their work on the anatomy, radiology, and comparative anatomy of the lungs.

The December issue of the *Bulletin de l'Office International d'Hygiène Publique* contains short histories of the development of the National Institute of the Public Health Service of the United States, of the Institute of Hygiene and Public Health at Calcutta, the School of Hygiene and Tropical Medicine at Sydney, and of the Institute of Hygiene in the Sudan, as well as reports on recent outbreaks of influenza in Sweden, Spain, and Eire.

The issue of *Le Monde Médical* for December is devoted to transfusion of blood.

The *Journal de Chirurgie* has resumed publication after suspension for one month.

Dr. Warfield T. Longcope, Baltimore, has been elected president of the board of directors of the Rockefeller Institute for Medical Research in succession to the late Dr. Charles R. Stockard.

The Services

EFFICIENCY DECORATION, T.A.

The King has conferred the Efficiency Decoration of the Territorial Army upon Lieutenant-Colonel D. Dougal, M.C., R.A.M.C., T.A., Lieutenant-Colonel A. J. Gibson, D.S.O., R.A.M.C., T.A., and Major W. T. B. Joss, M.C., R.A.M.C., T.A.

DEATHS IN THE SERVICES

Surgeon Captain ROGER BUDDLE, O.B.E., R.N. (ret.), died at Bournemouth on January 23, aged 49. He was the youngest son of C. F. Buddle of Auckland, New Zealand, and was educated at Otago University, where he graduated M.B., Ch.B. in 1913, subsequently studying at Charing Cross and taking the M.R.C.S., L.R.C.P. in 1921. Entering the Royal Navy, he became surgeon commander on August 5, 1926, and retired as surgeon captain on September 29, 1939. He served through the war of 1914–18, receiving the medals and the O.B.E. He had been a member of the British Medical Association since 1919.

Lieutenant-Colonel FRANCIS FREDERIC PERRY, C.M.G., C.I.E., I.M.S. (ret.), died at Headley Grange, Hampshire, on February 5, aged 85. He was born at Simla on December 26, 1854, and was educated at University College, London, where he took the Atkinson-Morley Scholarship in 1877. He qualified M.R.C.S., L.R.C.P. in 1876, subsequently studying at Vienna and taking the F.R.C.S. in 1890. He entered the Indian Medical Service as surgeon on March 31, 1879, passing first into Netley, where he gained the Herbert Scholarship and the Parkes (hygiene) and Martin (medicine) medals. He became lieutenant-colonel after twenty years' service, and retired, with an extra compensation pension, on June 14, 1909. After over two years' military service he was appointed to civil employ in the Punjab and posted to the then recently opened Punjab Medical College at Lahore in March, 1882, as professor of chemistry and chemical examiner to the Government. In that college he spent practically the whole of his service. In December, 1888, he was appointed professor of surgery and surgeon to the Mayo Hospital, Lahore. In 1904 he was appointed principal of the college, in addition to his professorship. He acted for six months in 1892 as professor of ophthalmic surgery in the Calcutta Medical College. In November, 1901, he was appointed Honorary Surgeon to the Viceroy, and on June 26, 1908, he received the C.I.E. After retirement he rejoined for service in the war of 1914–18 and served as commandant of the Indian hospitals at Brockenhurst, Hampshire, from their opening in November, 1914, to 1916. He received the C.M.G. on June 4, 1917, and was mentioned in dispatches in that year.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

Diphtheria and scarlet fever increased in incidence slightly in England and Wales during the week, and measles and whooping-cough declined, the former only slightly. On the other hand, there was a rise in the notifications of pneumonia and of cerebrospinal fever: this rise is part of a trend noticeable during the last five weeks, and the present acceleration suggests that epidemics of some magnitude may be imminent.

The assumption that the increase in the incidence of pneumonia is mainly due to the presence of influenza in the community is supported by the observed rise in the number of deaths attributed to influenza from 158 to 291. Increases of death from influenza were also recorded in London and Scotland, but so far Ireland appears to have escaped almost completely. As has been observed before in these columns, pneumonia has mainly affected the big towns and large centres of population, while measles, with few exceptions—notably Swansea 146, Carlisle 142, Cheltenham 84, Gloucester 55, Newport 54, and Blackpool 46—has avoided towns and remains largely a disease of urban and rural districts. Not so German measles, which has been widespread in towns as well as urban and rural districts. There can be little doubt that the notification figures for measles include some of the figures for German measles, either by error of diagnosis or intentionally in order to secure admission to hospital. Adolescents and adults have been affected much more frequently than children by both German measles and influenza.

The marked increase, amounting to nearly 50 per cent., in the incidence of cerebrospinal fever is the most striking feature of this week's epidemiological table. The disease has spread from thirty-six to forty of the sixty-one administrative areas in England and Wales, and in four centres the increases recorded have been considerable—notably, from 10 to 16 in Lancaster, from 6 to 14 in Glamorgan, from 5 to 13 in Surrey, and from 4 to 9 in Southampton. In eleven areas more than 3 cases were notified—namely, Durham 4 (Seaham U.D. 1, Barnard Castle R.D. 3); Hertford 4 (Barnet U.D. 1, Hitchin U.D. 2, Braughing R.D. 1); Kent 6 (Canterbury C.B. 1, Erith M.B. 1, Herne Bay U.D. 2, Whitstable U.D. 1, Dartford R.D. 1); Lancaster 16 (Bolton C.B. 1, Liverpool C.B. 2, Manchester 4, Oldham 1, St. Helens C.B. 1, Ashton-under-Lyne M.B. 1, Huyton with Roby 1, Lancaster M.B. 2, Tyldesley U.D. 1, Warrington R.D. 1, Whiston 1); Leicester 11 (Leicester C.B. 8, Lutterworth R.D. 1, Market Bosworth R.D. 2); London 5 (1 each in the metropolitan boroughs of Kensington, Lambeth, Poplar, Stoke Newington, and Wandsworth); Middlesex 4 (Edmonton M.B. 2, Staines U.D. 1, Wembley M.B. 1); Southampton 9 (Portsmouth 5, Southampton C.B. 1, Aldershot M.B. 1, Farnborough U.D. 1, Hartley Wintney R.D. 1); Stafford 5 (Walsall 1, Amblecote U.D. 1, Brierley Hill U.D. 1, Willenhall U.D. 2); Surrey 13 (Croydon 1, Guildford 4, Farnham U.D. 2, 1 each in U.D. of Dorking, Carshalton, Frimley and Camberley, Malden and Coombe, Richmond, Woking); Warwick 5 (Birmingham 4, Sutton Coldfield M.B. 1); Wilts 4 (Devizes R.D. 2, Marlborough M.B. 1, Amesbury R.D. 1); Glamorgan 14 (Swansea 3, Rhondda U.D. 4, Cowbridge R.D. 2, Llantrisant and Llantwit-Vardre R.D. 2, 1 each in U.D. of Bridgend, Penarth, and Porthcawl).

Scotland: Registrar-General's Report for 1938

For the first time for a number of years there has been an arrest in the decline in the birth rate for Scotland. The figure of 17.7 per 1,000 population is 0.1 above that for 1937, and compares favourably with that for England and Wales 15.1, Sweden 14.9, and France 14.6, but unfavourably with Italy 23.6, Germany 19.2, and Eire 19.3. The rise in the birth rate is probably due to the increase in the marriage rate, which during the past five years has been higher than at any time, with the exception of the abnormal years immediately following the last war. During 1938 the marriage rate was 7.76, only exceeded in 1873, when it was 7.77 per 1,000 population. The death rate of 12.6 per 1,000 population was the lowest ever recorded for Scotland, and compares favourably with France 15.4, Italy 13.9, and Eire 13.6, but unfavourably with Germany 11.9, England and Wales 11.6, and Holland 8.5. Compared with 1937 improvement is seen at each age period except for girls of school age, at which the rates are substantially the same. The pre-school age, except in the first year of life, showed a special fall in mortality, but the fall diminishes progressively with advance of age. Infantile mortality is now only one-half what it was at the beginning of the century, but the figure of 69.5 for 1,000 births gives no occasion for complacency. Scotland is still nearer the bottom of the list than the top, and compares unfavourably with Germany 61, England and Wales 53, U.S.A. 51, Holland 36, New Zealand 36.

The death rate from the principal epidemic diseases was 41 per 100,000, compared with 90 in the previous year, and is the lowest rate ever recorded. In order of importance the killing diseases were: Measles 549 deaths, diphtheria 430, whooping-cough 219, cerebrospinal fever 106, scarlet fever 98 (the previous lowest was 109 in 1929). There were 23 deaths from typhoid fever and 4 from the paratyphoid fevers. Deaths from other epidemic diseases include lethargic encephalitis 87 (2 more than in 1937), erysipelas 75 (34 fewer), dysentery 40 (15 more), and acute poliomyelitis 16 (5 more).

No. 3

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended January 20, 1940.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1940					1939 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	142	5	36	3	4	38	7	12		—
Deaths		1	2				1	1		
Diphtheria	789	31	231	25	33	1,345	132	194	54	22
Deaths	19	—	6	—	3	34	2	7	3	—
Dysentery	49	2	30	1	—	36	8	15		—
Deaths			—	—	—			1	—	—
Encephalitis lethargica, acute	2	—	—		—			—		—
Deaths		1	2				2	5		
Enteric (typhoid and paratyphoid) fever	7	—	5	4	—	22	5	1	7	1
Deaths	—	—	—	—	—	2	—	—	1	—
Erysipelas			60	6	4			93	8	6
Deaths		—	—				—	1		
Infective enteritis or diarrhoea under 2 years										
Deaths	35	4	7	4	2	52	14	11	4	2
Measles‡	2,700	37	50		211		30	20		3
Deaths	3	1	1	—	7	6	—	—	—	—
Ophthalmia neonatorum	73	10	23		—	87	13	24		1
Deaths										
Pneumonia, influenzal*	1,728	118	81	10	15	1,638	173	79	15	49
Deaths (from influenza)	291	29	85	2	3	223	26	60	16	11
Pneumonia, primary			609	17				436	14	
Deaths		141§		30	15		16		25	29
Polio-encephalitis, acute	1	—				5	1			
Deaths							—			
Poliomyelitis, acute	4	—	—	—	—	10	2	1	2	—
Deaths			—				2	—		
Puerperal fever	—	1	7	2	—	2	2	10		1
Deaths		—					—			
Puerperal pyrexia	129†	7	19		1	179	20	9		2
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,148	27	158	53	74	1,821	139	349	77	89
Deaths	3	—	—	—	—	—	—	2	1	—
Small-pox	1	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough‡	689	13	31		4		257	559		31
Deaths	5	—	—	—	—	20	5	16	4	2
Deaths (0-1 year)	446	49	113	35	22	466	85	85	37	36
Infant mortality rate (per 1,000 live births)						71	70			
Deaths (excluding stillbirths)	9,754	1,490	1,373	324	210	6,545	1,274	980	256	215
Annual death rate (per 1,000 persons living)			25.9	21.6	18.4	16.1	16.2	19.8	17.2	19.1
Live births	5,398	771	827	371	205	6,253	1,054	900	304	223
Annual rate per 1,000 persons living			16.7	24.8	18.0	15.4	13.4	18.2	20.4	19.8
Stillbirths	276	20	42			256	32	42		
Rate per 1,000 total births (including stillborn)			48			39	29			

* Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

† Includes figures for puerperal fever.

‡ Made notifiable generally on November 1, 1939.

§ The figure now includes deaths from all forms of pneumonia. Previous to this year deaths from primary pneumonia were classified separately.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

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SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone 24361 Edinburgh), and of the Office of the Cumann Doctúirí na h-Eireann (I.M.A. and B.M.A.), 95, Merrion Square, W., Dublin (telephone 62550 Dublin)

QUERIES AND ANSWERS

Flushing in a Man of 74

"A. G. P." writes: A man aged 74 is gradually deteriorating, but apart from myocardial degeneration shows no marked organic disease. He is now confined to bed. Each day, starting between 8 and 9 a.m., he begins to feel very hot—he calls it "fuming." His face, head, and neck assume a bright red colour. There is no sweating, and a four-hourly chart shows that the condition is apyrexial. A few months ago he had one evening a temperature of 105° F. for no apparent reason; this settled down in two days. The attacks last for several hours. I presume that it is due to degeneration of the heat-regulating centre, but wondered, on the basis of menopausal flushes in women, if any male glandular treatment would help.

Sterilization of Liquid Paraffin

Mr. FRANK ALLEN, M.P.S. (Plaistow, E.), writes: Dr. S. A. Montgomery (February 10, p. 242) states that he sterilizes liquid paraffin "by boiling for thirty minutes." I am writing to point out that the above recommendation would (*a*) if taken literally produce a highly explosive atmosphere; (*b*) if taken to mean "warming at 100° C. on a water bath" not produce sterility. The *Pharmacopoeia* demands 150° C. for sixty minutes for oils; and in the case of liquid paraffin this length of time is only just sufficient—thirty minutes is insufficient. It is well to bear in mind that gross contamination of liquid paraffin can readily occur. For whereas cod-liver, olive, and linseed oils particularly possess marked intrinsic germicidal power, liquid paraffin appears to possess none. So that although olive oil is sterile after only half an hour's heating, liquid paraffin requires, I repeat, a full hour at 150° C.

Income Tax

Purchase of Car

"MARRIED WOMAN" has, since the outbreak of war, been doing welfare clinic work for a local authority, and for this purpose has "had to buy a car." She does no other medical work. Can the cost of the car be claimed as an expense?

*** No; it represents capital outlay and as such is barred by the Acts. Running costs and depreciation are, of course, in a different category.

Commencement as Assistant

"E. E." began professional work as an assistant on April 1, 1939, at a salary of £400 plus £50 car allowance; he lives "rent and rates free," but has to pay for the heating and lighting of the surgery.

*** The previous year's basis does not apply to the *first* year of employment, the income from which is assessable on the current year's basis. (If it were otherwise presumably payment would have to be made for an extra year when the employment ceased.) The assessment will no doubt be made at the end of March, and the tax will be payable in one sum in, say, July. Capital expenses, such as the purchase of a car or a set of instruments, cannot be deducted, but, of course, the cost of fuel, etc., and a proportion of the wages and board of the maid reasonably attributable to her work in the surgery, etc., are allowable. Running expenses of the car can be deducted if the £50 is brought into the gross income. Assuming that "E. E." is taxable on £350 income, the tax for 1938–9 will be about £11.

LETTERS, NOTES, ETC.

Sterilization of Syringes and Needles

Dr. E. CRONIN LOWE (Southport) writes: The practical interest taken in this question prompts me to express my own experience, which refers to the past twenty-five years, during which time spirit with 5 per cent. tricresol has been regularly used as a means of sterilization of needles and syringes of all sizes up to 20 c.cm. for both clinical and laboratory technique purposes. A conservative estimate is that in three laboratories and seven clinics at least 3,000 injections a year have been made—that is, approximately 75,000 employments of this technique—without any evidence of contamination by either pathogenic or air-borne organisms. Such injections have included the administration of vaccines, sera, chemical and colloid materials, etc.; the taking of blood cultures and venous blood samples for biochemical purposes and blood transfusion technique; also, from the laboratory point of view, putting up vaccine preparations, animal inoculations, etc.—these have all been carried out by a similar method of sterilization as regards syringes and needles with completely satisfactory results. The technique employed is that the syringes and plungers are usually stored in spirit. When required for use the syringe and needle are assembled, thoroughly rinsed out with the spirit containing tricresol, followed by flaming of both the needle and the inside of the syringe barrel several times to free it of excess of spirit, and finally rinsed with sterile saline to remove traces of tricresol, which is apt to be left behind by the flaming process. Treated in this way syringes and needles have been tested literally hundreds of times by means of blood culture tests and proved sterile. On account of the interest aroused by the experience and observations of Bigger, Blacklock, and Parish (*Journal*, January 20, p. 79), all the jars of spirit (ten in all) in use in the various clinics and laboratories referred to have been tested by aerobic and anaerobic cultures maintained for seven days, and all cultures have remained completely sterile. Apart from gross accidental carelessness I feel that the spirit and tricresol method described of sterilization of syringes and needles for clinical purposes is reliable, satisfactory, practical, and not open to greater risk than other methods, and has the added advantage of maintaining syringes and needles in a more satisfactory condition for both clinic and laboratory uses.

Treatment of Influenza

Dr. W. N. LEAK (Winsford, Cheshire) writes: Owing to the totally unexpected and unsought publicity accorded to my letter in the *Journal* of February 3 (p. 191) on the use of vitamins A and D in the treatment of influenza, instead of the usual disclaimer it may be of more interest to fellow practitioners if I give a few details of the adjuvant treatment I adopt when using dekadexolin. Taking a typical panel patient in this epidemic who comes up with a terrible cough, sore chest, perhaps aching shoulders, and not having slept for three nights, temperature perhaps normal, perhaps up to 101°—besides giving a dose of dekadexolin, if he wants one I also give a tablet of acid. acetylsal. co. (old N.H.I. formula) to take as soon as he gets home, together with a similar tablet to take that night and the next, with a tab. barbiton. sol., grains 5, as well. In two days I expect to find the patient relatively comfortable, able to get up a bit the next day, and to return to work in ten days from the commencement of the treatment if his work is arduous; clerks, etc., may get back in a week. If I see the case first at home at night I often give an injection of tab. hyoscin. co. (P. D. and Co.), as this ensures a good night and stops the irritative cough better than anything. If the temperature is over 103°, or if it is over 101° after two days, besides another dose of dekadexolin I give M & B 693 straight away, as I believe it is impossible to diagnose many influenzal pneumonias by physical signs. For the terrible cough I find mist. ammon. chlor. co. (N.H.I.), with added diamorphine, best in the early stages; mist. tuss. sed. (N.H.I.), with diamorphine, best later on. However, where dekadexolin has been used the soreness of the chest has usually been alleviated within two days, and after four days the cough itself ceases to trouble, in the daytime anyhow. In many cases it seems to cease without the patient ever having had any expectoration at all.